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Construction and Validation of the Scale of Emotional Functioning: Medicine (SEF: MED)

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To the Graduate Council:

I am submitting herewith a dissertation written by Baileigh Kirkpatrick entitled "Construction and Validation of the Scale of Emotional Functioning: Medicine (SEF: MED)." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in School Psychology.

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Construction and Validation of the Scale of Emotional Functioning: Medicine (SEF: MED)

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Abstract

In order to construct and validate a scale of emotional intelligence (EI) for the medical field 80 residents responded to a 69-item self-report measure during the pilot phase the Scale of Emotional Functioning: Medicine (SEF: MED); based on a two-phase item and structural analyses a final 36-item version was created with adequate psychometric characteristics based on responses from 316 residents. Internal consistency reliabilities for the three SEF: MED scales of Interpersonal Relations (IR), Emotional Awareness (EA), and Emotional Management (EM) were .81, .82, and .84., respectively. Confirmatory Factor Analysis supported the expected three-factor solution. The SEF: MED was validated by comparing it to related measures (i.e., the Profile of Emotional Competence (PEC) and the Maslach Burnout Inventory- Human Services Survey for Medical Personnel (MBI-HSS (MP)). Correlation coefficients were consistent with predictions. For example, correlation coefficients between the Total EI composite on the SEF: MED and the PEC global scales ranged from .64 to .68. As expected, the Total EI composite on the SEF: MED was significantly related to the MBI-HSS (MP) Emotional Exhaustion, Depersonalization, and Personal Accomplishment scales (-.50, -.44, .52, respectively). The SEF: MED has the potential to provide useful data to medical physicians and other medical professionals as they consider their well-being and the health of their patients.

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CHAPTER I

Review of the Literature

Emotional intelligence (EI) is generally defined as the ability to accurately perceive and utilize emotions (Boyatzis, Goleman, & Rhee, 2000; Mayer & Salovey, 1997). EI is linked to several important real-world outcomes, including psychological well-being, dispositional coping, levels of anxiety and depression (Martins, Ramalho, & Morin, 2010; Schutte, Malouff, Thorsteinsson, Bhullar, & Rooke, 2007), healthy mental functioning generally (Downey et al., 2008), and interpersonal success, communication skills, stress regulation, and burnout (Nikolaou & Tsaousis, 2002; Schutte et al., 2001). Outcomes such as these, particularly negative outcomes, may be context dependent. The frequency and intensity of these outcomes appear to be related to situational influences and may be more problematic in some workplace settings and for individuals in particularly stressful careers. For example, burnout is especially prevalent within the medical field and particularly among residents and in-service physicians. However, the literature reporting relations between burnout and EI is scarce for this population. The literature that exists indicates a significant negative relation between EI and burnout, and a positive relationship between EI and clinical performance among medical residents (see Satterfield, Swenson, & Rabow, 2009). However, operationalizations of EI and burnout vary within the relevant literature, as do strategies to assess it. Additionally, there is not a psychometrically sound EI scale that includes items with language unique to health service provider situations/settings, particularly those most relevant for physicians. Consequently, the literature describing relations between EI and related constructs may have limited generalizability for this population. Thus, the purpose of this study is to: (a) describe development and continued

refinement of a psychometrically robust measure of EI for physicians, and (b) to compare resident EI using the instrument with highly related constructs, particularly burnout.

This literature review includes: (a) a brief history of the research describing then operationalizing the construct of emotional intelligence (EI) and its current status; (b) relations between EI and important related constructs (e.g., psychological health such as anxiety and depression, work-related success, and particularly stress and burnout); and (c) efforts to assess EI in the medical field and the relation between EI and one of the most prominent problems of medical health service providers—burnout. The literature review is followed by the rationale for this study, in particular the limitations associated with operationalizing EI for medical service professionals and how the goals of this study addresses some of those. Finally, relevant research questions are provided.

Emotional Intelligence Defined

Salovey and Mayer (1990) defined emotional intelligence (EI) as an aspect of social intelligence that encompasses one's ability to monitor and regulate one's own emotions, monitor and regulate others' emotions, and use this adaptively. This original definition has since been expanded on to include not only actions that represent EI behaviors but cognitive processes as well:

> Emotional intelligence involves the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth. (Mayer & Salovey, 1997, p.10)

While Mayer and Salovey were the first to create a definition of EI for the purpose of studying EI, and their 1997 definition appears comprehensive, other scholars have developed their own conceptualizations of EI.

Bar-On's (2006) definition of EI is similar to Mayer and Salovey's in that it is tied to social intelligence; the skills and constructs essential to EI are theoretically tied to social skills. Because of this unavoidable link between emotional and social intelligence, Bar-On refers to EI as Emotional-Social Intelligence (ESI): "emotional-social intelligence is a cross- section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands" (Bar-On, 2006, p.3). Based on this definition of EI, Bar-On developed the Emotional Quotient Inventory (EQ-i) to measure EI. This tool breaks EI into five main constructs: Intrapersonal, Interpersonal, Stress Management, Adaptability, and General Mood (Bar-On, 2006). These main constructs are reflective of Bar-On's model of EI, and research with this tool has led to further evolution of Bar-On's conceptualization of EI.

Goleman (1995) and Boyatzis (1982) also developed independent definitions of EI. Goleman and Boyatzis both proposed definitions that focused on the applied aspects of EI, such as workplace performance and management. Boyatzis and Goleman eventually explicated an integrated definition of EI: "Emotional intelligence is observed when a person demonstrates competencies that constitute self-awareness, self-management, social awareness, and social skills at appropriate times and ways in sufficient frequency to be effective in the situation" (Boyatzis et al., 2000, p. 3). This definition has been used to expand the examination of EI in the workplace, specifically through the development of the Emotional and Social Competence Inventory (ESCI; Boyatzis & Goleman, 2007). This assessment of EI measures 12 individual competencies over 4

broader areas: self-awareness, social awareness, self-management, and relationship management (Boyatzis, 2007). Because the ESCI is specific to workplace performance, it is widely used to target teamwork and workplace productivity.

Ability versus trait EI. Two different perspectives of EI can be taken from the definitions of EI. Mayer and Salovey's (1997) definition views EI as a description of an individual's abilities. This is an "ability" view of EI. Ability EI is one's actual ability to manage and understand emotions (Petrides, Frederickson & Furnham, 2004). This requires that tests of EI must have questions with "correct" answers (Mayer, Salovey, & Caruso, 2004). Correct items can be evaluated through general consensus on test items (i.e., the more test takers choose a particular answer, that answer is considered to be more correct than one which fewer respondents chose) or through criteria set by expert judges (Mayer et al., 2004). One criticism of ability EI measures is that expert and general consensus scoring can diverge and can even be contradictory (Mayer et al., 2004; Roberts, Zeidner, & Matthews, 2001).

On the other hand, Bar-On, Goleman, and Boyatzis propose a "trait EI" perspective (Bar-On, 2006; Boyatzis et al., 2000). Trait EI refers to self-perceptions about one's ability to manage and understand emotions (Petrides & Furnham, 2001; Petrides et al., 2004). Trait EI has also been referred to as emotional self-efficacy, meaning one's perceived emotional ability (Petrides et al., 2004). Trait EI is measured by self-report assessments. However, criticism of trait EI emphasizes that trait EI measures may reflect inaccurate self-perceptions of one's EI (Brackett & Mayer, 2003).

Previous literature has supported the distinction between ability and trait EI, as ability assessments have been shown to have low correlation with trait EI scales (Brackett & Mayer, 2003; Mayer, Salovey, & Caruso, 2002). While differing perspectives on EI influence definitions

put forth, the majority of definitions of EI share commonalities, i.e., the ability to accurately perceive and utilize emotions (one's own emotions as well as those of others). These perspectives have influenced the research on EI across many disciplines as the trait versus ability perspective influences EI assessment construction. For example, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer 2002) is the most prominently used measure of ability EI, while widely used measures of trait EI are more numerous and include self-report measures such as the EQ-I, Schutte Self-Report Emotional Intelligence Test (SSEIT), and the Profile of Emotional Competence (PEC) (Bar-On, 2006; Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013; Schutte, 1998)

Emotional Intelligence and Related Constructs

The construct of EI and the its core abilities are theoretically related to several other important constructs. For example, EI is broadly related to psychological well-being. Two meta-analyses focused on the link between EI and mental health found that higher EI was related to several indicators of psychological well-being, including dispositional coping, lower levels of anxiety and depression, less depressive rumination, and emotion regulation strategies (Martins et al., 2010; Schutte et al., 2007). The relationship between EI and mental health is not surprising as the ability to recognize and understand one's own emotions or emotional problems is an indicator of healthy mental functioning (Downey et al., 2008).

Aside from broad constructs, EI is also related to more specific abilities and skills. The relationship between EI and interpersonal skills are theoretically linked (Saarni, 1999), and researchers have examined this relationship thoroughly. Schutte et al. (2001) demonstrated the relationship between EI and several areas of successful interpersonal relationships including: empathy, self-monitoring, social skills, cooperation, relations with others, and marital

satisfaction. This study depicted positive correlations between EI and areas of interpersonal skills, specifically empathy, self-monitoring in social situations, social skills, and cooperation (Schutte et al., 2001). These findings not only support the relationship between EI and interpersonal skills, but supports the construct validity of EI as the two are theoretically related.

EI is also important for effective communication skills. Specifically, research has focused on the relationship between EI and effective communication skills in the workplace. For example, Schlaerth, Ensari, and Christian (2013) found a positive correlation between EI and effective conflict management among leaders in the workplace. Additionally, professional interpersonal communication skills have been correlated with higher EI (Wloszczak-Szubzda & Jarosz, 2013). EI is important to the ability to effectively establish and maintain interpersonal relationships, and this is especially true within the workplace. Recognizing and managing others' emotions is essential to effective communication, and researchers have demonstrated a significant relationship between EI and such skills in the workplace (see Brackett, Rivers & Salovey, 2011).

Furthermore, EI is important for stress regulation, an important construct in the workplace, and researchers have examined this across fields. Nikolaou and Tsaousis (2002) found that those who scored higher on EI reported less work-related stress than those who scored lower on EI. Similarly, Oginska-Bulik (2005) also found a negative relation between EI and perceived work-related stress (i.e., work overload, lack of rewards, and uncertainty in workplace). A meta-analysis of literature measuring EI and burnout in teachers found a negative relationship between the two variables, with social support as a mediator (Mérida-López & Extremera, 2017). Finally, Kinman and Grant (2011) examined the relationship between EI, social competencies, resilience, empathetic personal distress, and psychological distress among

social workers. Their findings supported the hypothesis that social workers who had high EI and social competence were more resilient to stress. Workers who were more adept than their peers at understanding their feelings, expressing emotion, and regulating emotion were better at coping with the stress that results from their job (Kinman & Grant, 2010). These results are consistent with the idea that EI can serve as a tool in managing work-related stress, a serious issue in the workplace. One of the most salient stress-related problems is burnout as the two are intrinsically linked.

Burnout

Burnout is described as a reaction to workplace stress, specifically in human services professions (Cherniss, 1980). Burnout is typically characterized by reduced motivation and effectiveness in work, chronic job stress, and feelings of being emotionally drained (Cherniss, 1980; Maslach & Jackson, 1981). As defined by Maslach, Jackson, and Leiter (1997), burnout has three contributing factors: emotional exhaustion, depersonalization, and reduced personal accomplishment. In short, burnout may be characterized as the result of uncontrolled stress. Emotional exhaustion refers to the feeling that one's emotional resources are too limited to meet work demands and the individual does not feel that they can give emotional support to their clients. When an individual fails to view clients positively or develops a negative attitude or feeling towards clients depersonalization can occur. The origin of emotional exhaustion and depersonalization are connected: emotional exhaustion occurs first and leads to depersonalization (Leiter, 1993). The third factor of burnout, reduced personal accomplishment, occurs when an individual begins to view themselves and their work with clients negatively, and feels dissatisfied with their job. Leiter (1993) found that this third factor developed separately from emotional exhaustion and depersonalization. According to the literature the conceptual

definitions of EI and the contributing factors of burnout mirror each other. In support of this conceptualization Lee and Ok (2012) demonstrated a negative relationship between EI and two areas of burnout: depersonalization and reduced personal accomplishment among participants in the hotel service industry.

Emotional Intelligence and Burnout in the Medical Field

Burnout is especially problematic within the medical profession. A literature review of research measuring burnout during residency found that burnout rates ranged from 25% to 75% (IsHak et al, 2009). In 2014, a survey of over 6,000 physicians found that 54.4% of individuals reported at least one sign of burnout, which has increased from 45% in 2011 (Shanafelt, et al., 2015). Burnout rates were broken down by specialty and ranged from over 70% in emergency medicine to just under 40% in preventative medicine. Burnout appears to become a problem during residency and continues through the career. Residents reported numerous factors in the workplace that contribute to their feelings of burnout, including: excessive time demands, lack of control over time management, limited work planning time, poor work organization, inherently difficult job situations, and interpersonal relationship stressors (Cohen & Pattern, 2005; Nyssen, Hansez, & Barele, Lamy, & DeKeyser 2003; Purdy, Lemkau, Rafferty, & Rudisill, 1987). Furthermore, midcareer physicians reported the highest rates of burnout, suggesting that even if an individual does not report burnout at the beginning of their career this does not mean they will not report symptoms in the future (Shanafelt, et al., 2015).

Because burnout is so prevalent in medical students and professionals, burnout prevention should be a top priority. While an obvious solution to burnout might be to decrease workplace stressors this is not often possible in some environments, like a medical residency. Thus, person-centered approaches to prevent burnout by changing the way the individual

responds to the stressful environment may be a viable alternative goal (Maslach & Goldberg, 1998). MacBride (1983) states that individuals are responsible for recognizing that they are experiencing stress and for managing or reducing that stress. One way this can be done is through developing coping skills, ventilation of emotional feelings, and conflict resolution. Self-analysis, such as understanding one's personality and motives, can also prevent burnout by calling attention to why an individual is experiencing burnout (Maslach & Goldberg, 1998). These coping and self-analytical skills center around emotional regulation, intrapersonal skills, and interpersonal skills, key aspects of EI.

Of the research that has involved EI within the medical field, there is a demonstrated relation between EI and burnout. Satterfield et al. (2009) measured EI at the beginning and end of one year of residency as well as burnout over 12 months. Results indicated that EI increased significantly ($p = .01$) from time one to time two. Mean burnout scores were comparable to those of other human service workers; however, EI at time two was significantly negatively correlated with burnout ($r = -0.443$, $p<.01$). Similarly, Weng et al., (2011b) found a significant negative correlation between burnout and EI as well as job satisfaction.

Other findings have relevance for clarifying the relation between EI and burnout and in the medical field and the literature has expanded significantly over the past 30 years, particularly within the context of the workplace. For example, according to Reilly (1994) when nurses reported experiencing more work-related stressors, they also report an increase in emotional exhaustion, which is one of the main factors contributing to burnout. In some studies, individuals report that work overload and lack of reward contribute to stress, and these factors echo the definitions and factors contributing to burnout (e.g. Maslach & Goldberg, 1998; Oginska-Bulik, 2005).

Similarly, female nurses exhibited a negative relation between certain aspects of EI and burnout (Gerits, Derksen, & Verbruggen, 2004). Specifically, nurses who had lower scores on Interpersonal, Adaptation, Stress Management, and General Mood scales of an EI measure had higher scores on the Emotional Exhaustion scale on a burnout measure. Furthermore, lower scores on all areas of an EI scale were correlated with Depersonalization scale of the burnout measure, and higher EI scores were correlated with lower scores on Personal Accomplishment (Gerits et al., 2004). Given the evidence for a negative relationship between EI and burnout across fields, it seems likely that EI provides tools necessary for resiliency to burnout.

EI is considered an important construct in the medical field, as it comprises many abilities that are essential for success in the profession (Gerits et al., 2004; Le & Ok, 2012; Mérida-López & Extremera, 2017). In addition to its relationship to burnout in the workplace, EI is becoming increasingly important in medical training and education, as described within the Accreditation Council for Graduate Medical Education's (ACGME) six core competencies for medical education: patient care, medical knowledge, practice based learning and improvement, systems based practice, professionalism, and interpersonal skills communication (Joyce, 2006). High competency in several of these areas are theoretically linked to EI such as patient care, professionalism, and interpersonal and communication skills (Stewart, 2001). Relatedly, medical educators have encouraged recruiting physicians with high EI, and argued that these skills should be fostered during training (Carrothers, Gergeory, & Gallagher, 2000; Feldman, 2001). Several studies have operationalized EI among medical professionals with mixed results (see Table 1 for review). For example, Carr (2009) found higher EI among male medical students compared to female students, and among Asian medical students compared to White students. However, McKinley et al., (2014) found no significant differences in EI between residents' gender, and

other researchers have demonstrated higher EI among female medical residents (Lindeman et al., 2017; Papanagnou et al., 2017). Researchers have not demonstrated a significant relationship between EI and field of specialization (Borges, Stratton, Wagner, & Elam, 2009). Finally, EI has been shown to change over time in residency programs (Beierle et al., 2018; Lebensohn et al., 2014; Papanagnou et al., 2017; Smith e al., 2016).

Teamwork. Researchers have examined the positive relationship between EI and communication skills in medical school interviews, attitudes towards communicating with patients, communication skills as rated by patients, and team behavior (Stratton, Elam, Murphy-Spencer, & Quinlivan, 2005; McCallin & Bramford, 2007). In a review of the literature, Arora et al. (2010) found evidence that EI was significantly positively correlated with more teamwork and communication. McCallin and Bramford (2007) found interdisciplinary teams with higher collective EI led to better teamwork, lower anxiety, and higher job satisfaction. Group EI (as measured by a group emotional intelligence questionnaire) has also been found to be predictive of team effectiveness (Amundson, 2005). Additionally, team safety improved as EI ability increased (McCallin & Bramford, 2007). Thus, EI is demonstrated as an essential skill for effective work as a team and with patients.

Patient Care. As EI is indicative of interpersonal skills and communication skills, EI is essential for effective patient care and patient satisfaction. Researchers have demonstrated a significant positive correlation between EI and patient trust (Weng et al., 2011a). Similarly, Weng et al., (2011c) demonstrated that surgeons with higher EI had higher levels of patient satisfaction and better patient-surgeon relationships. Furthermore, doctor EI has been positively correlated with patient trust, which is subsequently related to better doctor-patient relationships and patient satisfaction (Weng, 2008; Weng, Chen, Chen, Lu, & Hung, 2008). Additionally,

researchers found doctors with higher scores on the 'happiness' scale of an EI measure (EQ-I; Bar-On, 1997) related to higher patient satisfaction (Wagner, Moseley, Grant, Gore, & Owens, 2002).

Clinical Skills. The research examining the relationship between EI and clinical skills is conflicting. Gardner and Dunkin (2018) attempted to identify successful surgical residents, and found that EI as measured by the MSCEIT was not significantly related to overall resident performance. Hollis et al., (2017) found that while EI was related to overall job satisfaction and performance on the medical licensing exam, EI was not significantly related to milestones of clinical competency. Higher EI has also been associated with higher reported stress in clinical situations; though these students were better at reducing stress post-performance than those with lower EI (Arora et al., 2011).

Satterfield et al. (2009) demonstrated a significant relationship between EI and clinical performance. EI was significantly correlated with higher overall performance scores (r=.489, p<.01) and clinical interviewing ratings (Satterfield et al., 2009). Stratton et al. (2005) found a significant relationship between aspects of EI and communication skills in medical students. Specifically, attention to feelings, empathy, and perspective taking were positively related to communication skills as rated by simulated patients in a clinical skills evaluation setting. Similarly, researchers have found that EI mediates the relationship between attachment styles and effective communication with patients in a clinical setting (Cherry, Fletcher, & O'Sullivan, 2014). Weng et al., (2011b) found that surgeons who had higher EI also had patients who reported a better health status. After surgery. Finally, Talarico et al., (2013) found several areas of EI, including total EI, were significantly correlated with resident performance across the ACGME competencies as measured by daily faculty evaluations.

Measurement of Emotional Intelligence for the Medical Field

As previously discussed, there are numerous measures and conceptualizations of EI, and some that have focused on workplace performance (see EQ-i; Bar-On, 2006 and ESCI; Boyatzis & Goleman, 2007). However, workplace demands unique to the medical field have not been fully examined in this literature. There has been only one previous attempt to create a measure of EI specific to the medical field. Sharma and Jain (2014) designed a tool to measure the EI demands doctors face in the workplace, such as: managing others' stress, adapting to an environment of pain and death, and workplace stress outside of the personal life. The authors wrote items influenced by previous measures of EI to measure 5 domains: Interpersonal, Intrapersonal, Adaptability, Stress Management, and Mood Management. The scale consists of 20 self-report Likert-style items ranging from 1 "strongly disagree" to 5 "strongly agree." Psychometric properties of the scale are strong. Internal consistency Cronbach's alpha is 0.898, and the Guttman split-half reliability coefficient is .921, which are robust (Sharma & Jain, 2014). However, authors do not provide evidence of concurrent validity, and convergent and divergent validity are only demonstrated using inter-item correlations. Finally, although the authors sought to design a scale relevant for the medical field, they did not include language and context unique to EI skills within medical settings/situations.

Rationale

Despite EI's importance in building psychological, professional, and educational competencies in the workplace, and particularly within the medical field, there is still limited research examining EI with medical professionals. This lack of research could be due, in part, to the lack of a psychometrically and contextually adequate measure of EI specific to the field and population. Sharma and Jain (2014) sought to design an EI measure for doctors by measuring

areas that they identified as specific to the medical field (such as workplace stress and managing others' stress). While the psychometric properties reported were promising, evidence of the validity of this scale was lacking. Furthermore, Sharma and Jain (2014) did not include language or situations that are specific to health service providers. Thus, there is still a need for a valid tool to assess EI using language and contexts unique to medical professionals. This study seeks to address this need by constructing a psychometrically sound EI scale with items specific to the health service profession. The current study describes the development of a trait EI scale for physicians: The Scale of Emotional Functioning: Medicine (SEF: MED). Items for the SEF: MED were created and selected specifically to measure EI relevant to work as a medical professional. To date, one study has used the SEF: MED as a measure of EI among surgery residents (Beierle et al., 2018). Beierle et al. (2018) examined the changes in burnout and EI over progression in residency. Results demonstrated improvements in burnout as well as EI over time, with changes in personal accomplishment having the strongest correlation with changes in EI over time. Results were promising in that researchers demonstrated the usefulness of measuring EI over the progression in residency. However, participants were restricted to surgical residents and psychometric properties of the SEF: MED had not been fully examined.

In the current study construction of the instrument is described, including initial item development and refinement, confirmation of the theoretical conceptualization of the instrument (e.g., examination of the factor structure, item-scale correlations). Psychometric properties are also examined including concurrent and construct validity, which required comparison of the SEF: MED to a previously validated measure of EI as well as to the highly related construct of burnout. Specific research questions include:

Research Questions

1. Is there evidence to support respondent validity as determined by consistency of respondent scores on yoked item pairs (those with similar content) of the SEF: MED?

2. Is there evidence to support the basic psychometric integrity of the SEF: MED as a viable measure of EI for residents/in-service physicians as determined by a series of data analyses including a Confirmatory Factor Analysis (i.e., do item selection data support its anticipated three-factor structure) for this population? Do the scales exhibit adequate internal consistency reliability?

3. Is there evidence to support the concurrent validity of the SEF: MED as determined by the relation between it and an established measure in the field, the Profile of Emotional Competence (PEC; Brasseur et al., 2013)?

4. Is there evidence to support the construct validity of the SEF: MED based on the relation between EI and the related phenomenon of burnout among physicians, i.e., are the composite and three scales on the SEF: MED related to burnout as assessed by the three Maslach Burnout Inventory-Human Service Survey for Medical Personnel (MBI-HSS (MP); Maslach et al., 1997) scales?

CHAPTER II

Method

Participants and Setting

Participants included individuals currently completing a three- to five-year residency at a university medical center in the southeastern United States. Some of these residents participated in the pilot phase of instrument development as described below and additional residents participated in other phases of the instrument development, e.g., concurrent and construct validity. Data presented were collected over five rounds of administration: administrations one and two (pilot data collection; N=80), administration three (SEF: MED and MBI- HSS (MP), n=100), administration four (SEF: MED and PEC; n=55) and administration five (SEF: MED, PEC, MBI- HSS (MP); n=87).

Demographic information was collected, including gender, age, year in residency, and residency placement. Ten different residency placements were represented: anesthesia, dentistry, family medicine, internal medicine, OBGYN, OMFS, pathology, radiology, and surgery. The sample of participants ranged in age from 25 to 41 (n = 322) (*M* = 29.23, *SD* = 3.04). The sample was 24.7% (n = 125) female and 45.2% male (n = 229). 49.3% of residents were in Year 1 of residency (n = 175), 19.4% were in Year 2 (n = 69), 16.3% were in Year 3 (n = 58), 16.3% were in Year 4 (n = 32), and 5.1% were in Year 5 (n = 18). 12.4% of residents were in the Anesthesiology program (n = 43), 3.7% were in Dentistry (n = 13), 9.8% were in Family Medicine (n = 34), 17.3% were in Internal Medicine (n = 60), 9.8% were in OBGYN (n = 34), 3.7% were in oral and maxillofacial surgery (OMFS) (n = 13), 5.8% were in Pathology (n = 20), 8.9% were in Radiology (n = 31), 25.9% were in Surgery (n = 90), 2.3% were in a Transition

year, and 0.3% were in Urology (n = 1). The resident from Radiology was excluded from analyses to protect confidentiality. See Table 2 for demographic information.

Instruments

In this study, development of the Scale of Emotional Functioning: Medicine (SEF: MED) is described. An experimental version of this instrument was originally referred to as the Scale of Emotional Functioning: Hospital Service Providers (SEF: HSP) and was used to obtain the pilot data described below. In addition, to complete data collection for this study two other instruments were administered, the Profile of Emotional Competence (PEC; Brasseur et al., 2013) and the Maslach Burnout Inventory- Human Services Survey for Medical Personnel (MBI-HSS (MP); Maslach et al., 1997). Each is described below.

SEF: MED Item Generation. The first version of the SEP:HSP contained 69 self-report items. Content validity was addressed by careful selection of items. Items were initially developed based on an extensive review of the literature, including books and empirically reviewed journal articles that describe the theoretical basis of EI, and examining several already existing EI instruments. Items were written to address situations specific to and common in the medical field, such as interacting with patients. The scale was conceptualized to include three subscales: Interpersonal Skills (IS), Emotional Management (EM), and Emotional Awareness (EA), and each subscale contained 23 items. Responses were on a 5-point Likert-like scale indicating the following: Never, Rarely Sometimes, Often, or Always. Positive and negative items were alternated and reverse scored to preclude set effects. Thus, a "Never" response is scored 1 or 5, "Rarely" is scored 2 or 4, "Sometimes" is scored 3, "Often" is scores 2 or 4, and "Always" is scored 1 or 5.

SEF: MED Item Reduction. The pilot version of the SEF: MED was administered to a sample of residents during 2017. The pilot sample consisted of 80 residents representing ten areas of residency: anesthesia, dentistry, family medicine, internal medicine, OBGYN, OMFS, pathology, radiology, and surgery. Of the sample, 40% (*n*=32) were residents in surgery and the remaining 60% (*n*=47) were from other areas of residency. Thirty-two percent (*n*=26) of participants were female, 66.3% (*n*=53) were male. Ages of participants ranged from 25 – 37 (*M*= 28.8; *SD*= 2.77). Demographics were not collected for one participant.

Data were subjected to factor analyses, followed by examination of item-scale correlation coefficient and reliability fit statistics. Initially, exploratory factor analyses were employed to determine the extent to which the items loaded on the anticipated factors and two-factor, three-factor, and four-factor solutions were examined from a Varimax analysis, orthogonal rotation to maximize independence of the scales. Items with factor loadings greater than .35 on the intended subscales were examined and initially retained if they reflected behavior consistent with the subscale intent: IS, EM, and EA. Item-scale correlation coefficients were also examined as were the reliability fit statistics, i.e., in general, items which enhanced the reliability of the subscales were retained. The three-factor solution was considered the best fit with 13 items per scale based on analyses of the data reduction strategies and scree plot examination (i.e., eigenvalues), for a total of 39 items (see Table 3 for factor loadings and item-scale coefficients of these 39 items). One item, "respond in kind to the emotions of others" (item number 6) was reworded to "respond empathetically to the emotions of others" after pilot testing concluded in order to improve the clarity of the item. This item set has a Flesch Reading Ease score (a measure of language complexity) of 43.4, and a Flesch-Kincaid Grade Level score of 8.5 (Flesch, 1948). This 39-item version of the SEF: MED was completed by participants in the current study (see Appendix B).

After data had been collected from all five phases of the study using the 39-item version of the SEF: MED (seen in Appendix B) a final scale refinement phase was conducted given that the sample size had increased significantly (336 cases). Examination of another round of exploratory factor analytic data revealed that 3 items failed to load significantly (at .35 or higher) on any of the three factors and were eliminated leaving 36 items. Deleted items were: 'work well with teammates' 'am energized by changed' and 'use criticism constructively.' Four items were moved based on significant loadings that were different from those obtained in pilot testing and consideration of item content. The items had to exhibit face validity (i.e., content consistent with the newly assigned scale content). These items were: 'have difficulty being a good listener to patients' 'handle upsetting situations poorly' 'recognize the feelings of others' and 'experience emotions that seem compatible with those of others.' Item reduction left 36 items, 12 per scale.

The final item set included item pairs designed to determine consistency, i.e., items were worded similarly and respondents would be expected to answer the items similarly. The final version of the SEF: MED has a Flesch Reading Ease score of 43.7, and a Flesch-Kincaid Grade Level score of 8.5 (Flesch, 1948). See Appendix C for this final version of the SEF: MED and Table 4 for the factor loadings of items to scales. Data from the 36-item version of the SEF: MED are reported for all the remaining analyses reported in this study.

SEF: MED. The final 36-item version of the SEF: MED operationalizes Total EI as well as the following three subscales: Interpersonal Skills, Emotional Awareness, and Emotional Management. Each subscale contains 12 items specific to that scale. As with previous versions of the scale respondents are asked to respond to items by circling the option that best characterizes their behavior. Responses are on a 5-point Likert-like scale and every other item is reverse scored. Raw item scores are averaged together to obtain a subscale score. Total EI is computed

as an average of all raw item scores. The purpose of this study is to examine the psychometric qualities of this final version of the SEF: MED and those data are reflected in the Results section and in the Discussion section the results are discussed, placed in context of related literature, and implications examined.

PEC. The Profile of Emotional Competence (PEC) is a self-report measure of EI (Brasseur et al., 2013). The PEC consists of 50 self-report items on a 5-point Likert-like scale. Participants are instructed to respond to items how they "would normally respond." Responses range from 1- "statement does not describe you at all or you never respond like this" to 5- "statement describes you very well or that you experience this particular response very often" (Brasseur et al., 2013). The PEC yields 10 subscale scores, Intrapersonal EI, Interpersonal EI, and Global EI scores. Intrapersonal and Interpersonal composite scores all contain five subscales: Identification, Understanding, Expression, Regulation, and Use. Scores are given on each of these subscales under the Intrapersonal and Interpersonal composites, yielding the 10 subscale scores (see Figure 1 for a breakdown of the subscales). All scores contribute to the Global EI score.

Reliability and validity data of the PEC have been examined by Brasseur et al. (2013). Internal consistency coefficient alphas of the subscales range from .60 to .83, and for composite scores alphas are .84 or above. Cronbach's alphas calculated from the participants in this study for the PEC Intrapersonal EI and Interpersonal EI scales (.87 and .85, respectively) are similar to those reported in the Manual. According to the PEC validation study the PEC is characterized by excellent concurrent validity with another measure of EI, the Trait Emotional Intelligence Questionnaire- Short Form (TEIQue-SF; Petrides 2009). The PEC Intrapersonal, Interpersonal, and Global EI scales are significantly correlated with the TEIQue-SF at .78, .52, and .77

respectively. Furthermore, higher EI scores on the PEC are positively and significantly associated with related constructs such as increased happiness, better social relationships, positive affect, such as joy and relaxation, and increased job performance (Brasseur et al., 2013). Additionally, higher EI scores on the PEC are significantly negatively associated with negative affect, such as anger, sadness, and frustration (Brasseur et al., 2013).

MBI-HSS (MP). The Maslach Burnout Inventory- Human Services Survey for Medical Personnel (MBI-HSS (MP); Maslach et al., 1997) is a measure of burnout specific to medical personnel. This tool is a modified version of the slightly more generic Maslach Burnout Inventory- Human Services Survey (MBI-HSS) to include wording more specific to medical personnel (for example, the MBI-HSS (MP) uses the term "patients" instead of "recipients"). The MBI-HSS (MP) consists of 22 self-report statements about the frequency of their different feelings towards work. Responses are based on a 6-point Likert-like scale with each score indicating: 0-Never, 1- A few times a year or less, 2- Once a month or less, 3-A few times a month, 4-Once a week, 5-A few times a week, and 6-Every day. The MBI-HSS (MP) yields three subscale scores: Emotional Exhaustion, Depersonalization, and Personal Accomplishment.

The MBI-HSS (MP) does not currently have reliability or validity data; however, the MBI-HSS has strong psychometric properties. Cronbach's coefficient alphas for the Emotional Exhaustion, Depersonalization, and Personal Accomplishment subscales on the MBI-HSS are .90, .79, and .71 respectively (Maslach, Jackson, Leiter, Schaufeli, & Schwab, 2016). Current Cronbach's coefficient alphas for the Emotional Exhaustion, Depersonalization, and Personal Accomplishment subscales on the MBI-HSS (MP) (.91, .75, and .80 respectively) are consistent with the previously reported alphas for the MBI-HSS. Test-retest reliability has been examined in several different samples and has ranged from .50 to .82 (see Lee & Ashforth, 1993; Leiter,

1990; Maslach et al., 2016). Validity of the MBI-HSS has been demonstrated by comparing scores to burnout observed by others (see Jackson & Maslach, 1982; Maslach & Jackson, 1979), examining job demands (Alarcon, 2011), and discriminant validity between burnout and other related constructs such as job dissatisfaction and depression (see Schaufeli & Enzmann, 1998).

Procedure

Residents were asked to complete pencil and paper versions of the SEF: MED, PEC, and MBI-HSS (MP) in groups during orientations or continuing education seminars where attendance was either mandatory or strongly encouraged as part of the resident training program. Initially, during the first three rounds of data collection (2017) only the SEF: MED and MBI HSS (MP) were administered, in counter-balanced order. During the following two rounds of data collection (2018) all three instruments were administered to a subset of the residents, also in counter-balanced order. All residents were assigned a random identification number to preserve anonymity, consistent with the approved Hospital IRB procedures and to ensure capability for future tracking. Packets of the instruments in counterbalanced order were prepared; the front page included a random identification number and questions that requested demographic data. As residents entered the room they were directed to find the instrument packet with their name on it. They were then asked to write their identification number on all pages and complete the instruments. Each instrument included written directions. Residents were told that participation was voluntary and results would remain anonymous.

Data Analyses

In addition to the item analyses described above for the pilot phase of the study, the following analyses were conducted for the final 36-item scale and yielded results reported below. Descriptive data and analyses addressing Research Questions two, three, and four were

conducted and results reported depended on data obtained from the analyses calculated for Research Question one. Thus, results from analyses addressing Research Question one were obtained initially, and descriptive data and analyses for Research Questions two, three, and four are presented following Research Questions one. To determine the validity of respondent scoring the consistency of their scores on the yoked item pairs containing similar content was evaluated and some cases deleted. Based on the results of this analyses descriptive statistics such as means, standard deviations, ranges, skewness, and kurtosis were obtained. Next, consistent with Research Question two, analyses designed to investigate basic psychometric integrity of the SEF: MED were conducted (confirmatory factor analysis, reliability indices). As required to address Research Question three, data focusing on the relationships between the SEF: MED and related measures (PEC) were examined (e.g., correlation coefficients between similar scales from the PEC). Finally, coefficients evaluating predicted relations between SEF: MED scales and MBI-HSS (MP) were calculated (Research Question four).

CHAPTER III

Results

In this section data obtained from the analyses addressing Research Question one are presented first, followed by descriptive statistics. Results from analyses addressing Research Questions two, three, and four follow.

Research Question 1: Evidence of Respondent Validity

On the SEF: MED 12, items were included as consistency pairs (i.e., content-similar item pairs); on these yoked items respondents are expected to provide the same rating (e.g., a rating of '4' on both items). Items were identified by the SEF: MED authors prior to analysis. The extent to which the language of the yoked items appears to elicit the same ratings was evaluated by a sample of 23 non-physician undergraduate students who independently paired the consistency items as part of a class assignment. Participants were shown the 12 items and asked to match items that contained consistent content (see Appendix D for clarification of directions and format). Results were evaluated by examining the percentage of agreement for each item pair. For example, if only half of respondents paired 'I exhibit a calming influence' with 'I easily calm anxious patients,' (which were items identified as pairs by SEF: MED authors) the percentage of agreement for that item would be 50%. Results indicated that across item pairs, the percentage of respondents in agreement with author-identified item pairs range from 73.91% (n = 17) to 100% (n = 23). See Table 5 for percentage of agreement across specific item pairs. Due to the high levels of agreement across consistency item pairs, all pairs were maintained.

Consistency items include: Items 35 and 28, Items 3 and 27, Items 13 and 24, Items 18 and 30, Items 25 and 34, and Items 26 and 33. To assess participant respondent consistency, the

absolute difference was taken for each pair of items. Next, the absolute differences for each item pair were summed. This gave a level of overall inconsistency, the 'Inconsistency Score.'

Of 336 participants, Inconsistency Scores ranged from 0 to 7 (*M* = 2.61, *SD* = 1.58, mode = 2). Of the sample 8.9% (n = 30) had an inconsistency score of 0 (i.e., they gave consistent responses across all item pairs). 15.2% (n = 51) had an inconsistency score of 1, 17.2% (n = 87) had an inconsistency score of 2, 16.6% (n = 84) had an inconsistency score of 3, 8.3% (n = 42) had an inconsistency score of 4, 4.3% (n = 22) had an inconsistency score of 5, 5.4% (n = 18) had an inconsistency score of 6, 0.6% (n = 2) had an inconsistency score of 7. 6.0% (n = 20) had an inconsistency score equal to or greater than 6. A score of 5.77 is 2 standard deviations above the mean, large and rare enough to be considered significantly different from average . Consequently, participants with an Inconsistency Score of 6 of above were deemed "inconsistent respondents," and their scores were eliminated (n = 20). Descriptive statistics based on the 36-item SEF: MED follow.

Descriptive Statistics

Composite Total EI scores on the SEF: MED were obtained from the final pool of participants after inconsistent respondents were removed (N = 316) and range from 2.72 to 4.89. The average Total EI score across participants is 3.90 (*SD* = 0.35). Scores on the IS subscale range from 2.50 to 5.00, with an average score of 3.94 (*SD* = 0.42, n = 316). Scores on the EM subscale range from 2.25 to 5.00, with an average score of 3.82 (*SD* = 0.44, n = 316). Finally, scores on the EA subscale range from 2.83 to 5.00, with an average score of 3.94 (*SD* = 0.37, n = 316). Scores across the three distributions are approximately normally distributed, with skewness ranging from -.40 to -.13 and kurtosis ranging from .35 to .72. See Table 6 for SEF: MED descriptive statistics.

EI scores on the PEC were also examined. Global EI as measured by the PEC range from 2.66 to 4.74 (n = 135), with an average score of 3.77 (*SD* = 0.37). Scores on the Intrapersonal scale range from 2.84 to 4.68 (n = 135), with an average score of 3.79 (*SD* = 0.42). Scores on the Interpersonal scale range from 2.48 to 4.76 (n = 135), with an average score of 3.75 (*SD* = 0.42) Mean scores across the Intrapersonal subscales (Identification, Understanding, Expression, Regulation, and Utilization) range from 3.53 to 4.09. Mean scores across the Interpersonal subscales (Identification, Understanding, Expression, Regulation, and Utilization) ranged from 3.17 to 4.14. Scores were normally distributed, with skewness ranging from -.41 to .01 and kurtosis ranging from -.45 to .61. See Table 7 for PEC descriptive statistics.

Burnout was measured via the MBI- HSS (MP). Scores on the Emotional Exhaustion subscale range from 0.00 to 46.00, with an average score of 19.14 (*SD* = 10.28, n = 262). Scores on the Depersonalization subscale range from 0.00 to 24.00, with an average score of 9.47 (*SD* = 5.85, n = 262). Finally, scores on the Personal Accomplishment subscale range from 5.00 to 48.00, with an average score of 37.92 (*SD* = 6.90, n = 262). Emotional Exhaustion and Depersonalization scores are normally distributed, with skewness ranging from .23 to .35 and kurtosis ranging from -.68 to -.38. The Personal Accomplishment skewness scores are slightly negatively skewed (-1.01) and kurtosis indicates a positively peaked distribution (1.73) (Hair, Hult, Ringle, & Sarstedt, 2016). See Table 8 for descriptive statistics for the MBI-HSS (MP).

Research Question 2: Evidence of SEF: MED Psychometric Integrity

In order to investigate the psychometric integrity of the 36-item SEF: MED results from exploratory (EFA) and confirmatory factor analyses (CFA) were performed and reliability estimates obtained. Item loadings by factor are shown in Table 4. Most loadings met or exceeded .35. CFA results addressed the extent to which the 3-factor model represents a fit to the obtained

data. The three-factor model fit was determined using four indexes of fit: relative chi square (i.e., chi square divided by degrees of freedom, CMIN/DF) (Wheaton, Muthen, Alwin, & Summers, 1977), Tucker and Lewis's index of fit (TLI; Tucker & Lewis, 1973), Bentler's comparative fit index (CFI; Bentler 1990), and the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993). Criterion values indicative of a good model fit vary for each index. For example, CMIN/DF values ranging between 2 and 5 indicate a reasonable fit (Marsh and Hocevar, 1985). CFI and TLI values equal to or above .90 indicate a reasonable model fit, while an RMSEA value less than .11 indicates a reasonable fit (Browne & Cudeck, 1993).

All the values obtained from the fit analyses provide evidence of a reasonable 3-factor model fit. The three-factor model yielded a CMIN/DF fit index of 4.18. Both the TLI and CFI values are greater than .90 (.97 and .98, respectively). The RMSEA fit statistic is .10, which meets model fit criteria (see Table 9).

Reliabilities (i.e., Cronbach's alphas (α) calculated for each scale of this final version of the SEF: MED reveal acceptable estimates of internal consistency. Alphas for the final version are .81, .82, and .84 for IS, EM, and EA respectively.

In summary, EFA CFA internal reliability data largely support the anticipated three-factor structure of the SEF: MED And, based on the data in Table 9 and the model shown in Figure 2 each scale is strongly related to the Total EI composite.

Although it is not evidence of the psychometric integrity of the SEF:MED directly, data showing the relative magnitude of the three means are of interest. A mean-difference analysis was calculated. Specifically, results from a one-way repeated measure analysis of variance (ANOVA) with a Greenhouse-Geisser correction reveals a statistically significant difference among subscales (F (1.704, 536.67) = 19.565, $p < .01$). Results of the Bonferroni post hoc tests

show the EM mean score (M=3.82, SD=0.44) is significantly lower than the IS mean score (M=3.94, SD=0.42), t (315) = 4.58, $p < .01$. The EM mean score is also significantly lower than the EA mean score (M=3.94, SD=0.37), t (315) = -5.51, $p < .01$. The IS and EA means are not significantly different.

Research Question 3: Evidence of Concurrent Validity

Concurrent validity was determined by examining the relationship between scores on the SEF: MED Total EI and scale scores and subscales of the PEC via Pearson r correlation coefficients; effect sizes were estimated from coefficients of determination (r^2). The Total EI composite score on the SEF: MED is significantly positively correlated with Global EI on the PEC (r = 0.68, $p < 0.01$, r^2 = 0.46). Total EI on the SEF: MED is also significantly positively correlated with the Intrapersonal and Interpersonal subscales (r = 0.64, p < .01, r^2 = 0.41; r = 0.64, $p < 0.01$, r^2 = 0.41, respectively). Subscale correlations were also examined. The SEF: MED IS subscale is significantly positively correlated with the Global EI, Intrapersonal, and Interpersonal subscales on the PEC (r = .63, $p < 0.01$, r^2 = 0.40, r = 0.56, $p < 0.01$, , r^2 = 0.32; r = 0.56, $p < .01$, r^2 = 0.32 respectively). The SEF: MED EM subscale is significantly positively correlated with the PEC Global EI, Intrapersonal, and Interpersonal subscales (r = 0.47, $p < 0.01$, r^2 = 0.22; r = .52, $p < .01$, r^2 = 0.27; r = .30, $p < .01$, r^2 =.09, respectively). Finally, the SEF: MED EA subscale is significantly positively correlated with the Global EI, Intrapersonal, and Interpersonal subscales on the PEC (r = .66, $p < .01$, r^2 = 0.44; r = .55, $p < .01$, r^2 = 0.30; r = .62, $p < .01$, r^2 = 0.38, respectively) (see Table 10).

Correlations between the SEF: MED and the 10 molecular PEC subscales were also examined. Total EI on the SEF: MED is significantly positively correlated with Intrapersonal Regulation (r = .23, p<.01), Interpersonal Identification (r = .24, $p < .01$), Interpersonal

Expression (r = .25, p < .01), and Interpersonal Regulation (r = .35, p < .01) subscales on the PEC.

The SEF: MED IS subscale is significantly positively correlated with the following PEC scales: Intrapersonal Expression (r = .17, p < .05), Intrapersonal Utilization (r = .19, p < .05), Interpersonal Identification (r = .22, p < .05), Interpersonal Expression (r = .32, p < .01), Interpersonal Regulation (r = .37, p < .01). The SEF: MED EM subscale was significantly positively correlated with the Intrapersonal Regulation (r = .39, p < .01) subscale on the PEC. The SEF: MED EA subscale is significantly positively correlated with the following PEC subscales: Intrapersonal Utilization (r = .27, p < .01), Interpersonal Identification (r = .29, p < .01), Interpersonal Expression (r = .26, p < .01), and Interpersonal Regulation (r = .38, p < .01). See Table 11.

Research Question 4: Evidence of SEF: MED Construct Validity

SEF: MED construct validity was evaluated by examining Pearson r and r^2 values characterizing the relationship between scores on the SEF: MED and those from the MBI-HSS (MP). According to results from these analyses the Total EI composite score is significantly negatively correlated with Emotional Exhaustion and Depersonalization (r = -.50, p<.01, r^2=.25; r = -.44, p<.01, r^2=.19, respectively) and is significantly positively correlated with Personal Accomplishment (r = .52, p<.01, r^2 = .27). Furthermore, the IS subscale is significantly negatively correlated with Emotional Exhaustion and Depersonalization (r = -.38, p < .01, r^2=.14; r = -.46, p < .01, r^2 = .21, respectively) and significantly positively correlates with Personal Accomplishment (r = .46, p < .01, r^2 = .21). The EM subscale is also significantly negatively correlated with Emotional Exhaustion and Depersonalization (r = -.54, p < .01, r^2=.29; r = -.35, p<.01, r^2=.12, respectively) and is significantly positively correlated with

Personal Accomplishment (r = .39, p<.01, r^2 = .15). Finally, the EA subscale is significantly negatively correlated with Emotional Exhaustion and Depersonalization (r = -.34, p < .01, r^2 = .12; r = -.30, p<.01, r^2=.09, respectively) and significantly positively correlated with Personal Accomplishment (r = .47, p < .01, r^2 = .22). Shared variance between the SEF: MED and MBI-HSS (MP) ranges from 9% to 29%, which is considered reasonable overlap for two related but different constructs. from See Table 12 for a summary of these results.

CHAPTER IV

Discussion

EI (Emotional Intelligence) is an important psychological construct, primarily because there is a developing literature explicating its relationship to critical health and vocational outcomes such as psychological well-being and interpersonal success (Martins et al., 2010; Schutte et al., 2007; Nikolaou & Tsaousis, 2002; Schutte et al., 2001) and workplace characteristics, such as increased teamwork and lower levels of burnout (Arora et al., 2010; Satterfield et al., 2009; Weng et al., 2011b). These data are particularly salient to medical professionals given the increasing burnout and suicide rates within the profession (Shanafelt et al., 2015). The importance of EI in the medical field is emphasized by the language contained in several of the ACGME's core competencies related to EI, such as interpersonal skills communication (Joyce, 2006; Stewart, 2001). However, research examining the relationship between EI and important workplace variables in the medical field is still somewhat sparse, in part due to the lack of a reliable and valid operationalization of EI specific to the medical setting. The purpose of this study was to validate a measure of EI that is specific to medical professionals, the Scale of Emotional Functioning: Medicine (SEF: MED) and its relationship to burnout. The SEF: MED is specific to the medical field in that the items use language and situations that characterize medical situations and setting (e.g., use of the word "patients"). Results from this study provide tentative support for the psychometric integrity of the SEF: MED. Below these results are very briefly reiterated and the implications discussed within the context of the existing EI literature within the medical field.

As previously described, in order to develop the SEF: MED it was administered to medical doctors in residency along with two other relevant instruments, the PEC, and the MBI-

HSS (MP). For context, it is important to provide a historical data-based link between the SEF: MED and its experimental predecessor, the SEF: HSP. Although the psychometric properties of the SEF: HSP had not been examined in detail, data from the 39-item version of it were reported in one previous study of residents (Beierle et al., 2018). In fact, at the time of the data collection/analyses for the previous study only data from an item-scale correlational analyses, item loadings from an *exploratory* factor analyses, and reliability estimates from the three SEF:HSP subscales were available from a relatively small sample (N = 80) of surgical residents. Of note, important data from the results of the SEF: MED data collection/analyses show a strong correspondence between the two instruments. That is, the mean score obtained on the Total EI composite of the experimental SEF: HSP (M=3.85) is comparable to the current mean obtained for the SEF: MED (M=3.88). The correlation coefficient between Total EI on the SEF: HSP pilot version and the current SEF: MED Total EI is $r = .71$, $p < .01$. This correlation coefficient is smaller than would be expected from a test-retest operationalization; it should *not* be considered an indication of test-retest stability for a variety of reasons. For example the sample for the pilot version is smaller and was obtained approximately two years before the collection of data for the SEF:MED. In addition, some of the residents comprising the SEF:MED sample completed multiple administrations of the test as part of a longitudinal study and thus had multiple exposures to EI, unlike the residents in the pilot sample. Nonetheless, despite these sample differences the coefficient between the SEF:HSP and SEF:MED is high and statistically significant and are consistent with expectations given that the items and structure are very similar across both instruments. In fact, the SEF: MED represents a further refinement of the SEF: HSP, as described above in the Method section of this study.

Because the evidence for the validity of the SEF: MED from this study rests in part on the statistical relationships between it and other related measures, namely the PEC and MBI-HSS (MP), comparisons of measures of central tendency from the PEC and MBI-HSS (MP) from the participants assessed in this study to scores reported in the respective manuals for the general population are important for building context. As an example, the average mean score for Global EI obtained on the PEC from the participants in this study (M = 3.76) is somewhat higher than the mean reported for the general population (M=3.38) by Brasseur et al., (2013). Higher scores among the resident population obtained in this study compared to the general population is not surprising and is consistent with previous literature that has demonstrated higher EI among residents when compared to national norms (Jensen et al., 2008). While the PEC mean is slightly higher in the current population than those previously reported, scores are normally distributed, and confidence can be placed in the use of the PEC among residents. Means from MBI-HSS (MP) from participants in this study for the Emotional Exhaustion, Depersonalization, and Personal Accomplishment (M = 19.14, M = 9.47, and M = 37.92, respectively) scales are similar to those reported for a group of medical professionals who took the MBI-HSS (M =22.19, M = 7.12, and M = 36.53, respectively) (Maslach et al., 1997). Scores are nonnormally distributed for the Personal accomplishment scale (scores are positively skewed and positively peaked, as evident by skewness and kurtosis). However, due to means similar to previously reported levels, results are likely an accurate representation of burnout among the current population. These data help provide a perspective on the confidence medical professionals can place in the results from this study.

To address Research Question one (respondent validity) performance on yoked consistency items were examined and data from inconsistent participants were eliminated. For

this study respondent validity (and indirectly, content validity), was supported by the finding that the majority of participants responded to these similar items in a consistent way, as indicated in the Results section. Scores from 6% (n = 20) of the sample were eliminated from analyses based an elevated Inconsistency Score. This analysis is consistent with the strategy employed by other authors when the goal is to address respondent validity. That is, consistency indexes are used in most self-report assessment measures, as well as observer report measures. For example, one widely used behavioral rating scale, the Conners 3rd Edition includes a measure of consistent responding across the self-report, parent-report, and teacher-report versions. Inconsistency scores well above the average are considered invalid, and authors suggest interpreting that participant's scores with caution (Conners, 2008). Similarly, the inclusion of an inconsistency index has been successfully employed in widely used EI scales. For example, the Emotional Quotient Inventory (EQ-i) as well as the Emotional Quotient Inventory: Youth Version (EQ-i: YV) both include an Inconsistency Index as a measure of a respondent's response validity (Bar-On, 1997; Bar-On & Parker, 2000).

Results from the data addressing Research Question two provide evidence of adequate to strong psychometric properties of the SEF: MED based on indices from traditional analyses (e.g., confirmatory factor analyses, reliability), and provide tentative support for its construct validity. This finding is relevant for medical professionals who are interested in using a discipline-specific operationalization of EI for personnel selection and/or professional development. Internal reliabilities are similar to previously validated measures of EI, such as the Emotional-Social Competence Inventory (ranging from .74 to .87), the Schutte Self-Report Emotional Intelligence Test (.90), and the PEC (ranging from .60 to .87) (Brasseur et al., 2013; Boyatzis & Goleman, 2007; Schutte, 1998). Finally, Cronbach's alphas are comparable to the only other EI measure

specific to the medical field (.89) (Sharma & Jain, 2014). Additionally, though not direct evidence of psychometric integrity, subscale mean scores were compared to determine if differences in mean scores were present. Results indicated that EM scores are significantly lower than both IS and EA scores. It appears that managing emotions (EM) is more difficult for this population than effectively interacting with others (IS) and being aware of one's own and others' emotions (EA). This finding is perhaps expected when the health care setting is considered. Residents are placed in high-stress situations frequently, and these situations likely place a high demand on managing one's emotions in order to remain professional and effective. However, results appear to conflict with previous research. Arora et al. (2011) found that physicians with higher EI (as measured by a common self-report EI assessment, the TEIQue- SF) had higher reported stress in clinical situations but were better at reducing that stress. Based on this finding, one might anticipate that residents with higher EA would also be better and managing those emotions they identify, such as stress. However, the current population appears to have a deficit in the management in emotions in comparison to other EI skills. Further data collection may indicate that this difference in scores is typical (i.e., perhaps medical professionals have more difficulty managing emotions compared to other EI skills).

Overall, results support the validity of the SEF: MED as a psychometrically sound measure of EI among medical residents, and offer information on interpretation of the SEF: MED. The three-factor solution is supported, and subscale scores appear to be reliable. Results support the use of the current three-factor solution as a conceptualization of EI. Furthermore, comparison of means provides information on how to interpret SEF: MED scores for the current population. Future research using the SEF: MED can expect EM scores to be significantly lower than other areas of EI (i.e., IS and EA).

To address Research Question three (i.e., concurrent validity), the SEF: MED was compared to the PEC. The Total EI composite as well as all three subscales on the SEF: MED are significantly related to Total EI, Intrapersonal and Interpersonal scales on the PEC. Data supporting the psychometric integrity of the PEC were provided in the Method section and is supplemented by strong reliability coefficients obtained from the participants in this study. Cronbach's coefficient alphas on the PEC for Intrapersonal EI and Interpersonal EI (.87 and .85, respectively) are consistent with previously reported alphas (.90 and .90, respectively). As the SEF: MED is designed to measure overall EI as well as intrapersonal and interpersonal aspects of EI, these results indicate that EI as operationalized by the SEF: MED is comparable to a generic measure of EI. Users of the SEF: MED can be relatively confident that the SEF: MED is measuring multiple and molecular as well as global aspects of EI.

PEC subscale scores correlate less well to the SEF: MED than do the scale scores, as is expected because the more molecular subscales consist of only five items, and consequently exhibit low reliability coefficients relative to the more global scales. Nonetheless, there are some explanations/implications that might be reasonable to examine. For example, the IS subscale was significantly related to three Interpersonal subscales on the PEC (i.e., Identification, Expression, and Regulation) which seems reasonable given that all these scales focus on the quality of interpersonal skills. However, IS was also significantly related to two Intrapersonal scales on the PEC, perhaps because knowing about the quality of intrapersonal (within self) EI may predispose better understanding of relationship building. Scores on the EM subscale are significantly related to the Intrapersonal Regulation subscale. As the EM subscale is intended to measure one's ability to regulate emotions within oneself *and* among others, a relationship between it and Intrapersonal Regulation is expected. However, the EM subscale was not significantly related to

the Interpersonal Regulation subscale, which would be expected. Sores on the EA subscale are related to several PEC subscales. The relationship between EA and Interpersonal- Identification is as expected because the EA scale is, in part, intended to measure one's ability to identify others' emotions. However, a significant relationship between EA and Intrapersonal-Identification was anticipated because EA is also intended to measure one's ability to identify one's own emotions (Table 10 depicts correlation coefficients for the molar and molecular comparisons).

Overall, results support concurrent validity; EI as measured by the SEF: MED was related to EI as measured by a previously developed and validated instrument of EI, the PEC. The convergence between an EI instrument specific to the medical field (SEF: MED) and a generic EI instrument (PEC) provides tentative evidence that the SEF: MED has promise as a valid measure of EI. And, results are consistent with estimates of the relationships between the PEC and other operationalizations of EI and related constructs, which provides additional context for interpretation of these data. For example, the PEC is related strongly to the TEIQue-SF; (Petrides, 2009). The PEC Intrapersonal, Interpersonal, and Global EI scales are significantly correlated with the TEIQue-SF at .78, .52, and .77 respectively. Finally, higher EI scores on the PEC are associated with related constructs such as increased happiness (measured via the Subjective Happiness Scale, $r = .40$, $p < .01$), better social relationships (assessed via the Quality of Interpersonal Relationships Scale, $r = .48$, $p < .01$), and positive affect (measured via self-reported areas of positive affect such as joy and relaxation, $r = .46$, $p < .01$) (Brasseur et al., 2013).

To address Research Question four, SEF: MED scores were compared to those from the MBI-HSS (MP). Of note, no MBI-HSS (MP) reliability or validity information was available

from the authors of the MBI-HSS (MP); however, there are relevant data from the MBI- HSS, and it and the MBI-HSS (MP) are very similar. Data supporting the MBI-HSS are described in the Method section. Additional evidence for the psychometric integrity of the MBI-HSS (MP) was obtained from the participants of this study. That is, Cronbach's coefficient alphas from the participants for the MBI- HSS (MP) subscales are 91, .75, and .80 for the Emotional Exhaustion, Depersonalization, and Personal Accomplishment scales, respectively, and are consistent with previously reported alphas for the MBI-HSS (.90, .79, and .71, respectively) (Maslach et al., 2016). These reliabilities are moderately strong and increase confidence professionals can have in using the MBI-HSS (MP) for operationalizing burnout in medical professionals and, as in this study, as a criterion measure for determining the relationship between burnout and EI.

Results from comparisons of the SEF: MED and MBI-HSS (MP) in this study indicate a relatively strong relationship between EI and burnout, and in the anticipated direction based on logic and the bulk of the literature. The relationship between the SEF: MED and MBI-HSS (MP) is characterized by statistically significant correlation coefficients across all subscale comparisons. The Total EI composite and all three scales are negatively correlated with MBI-HSS (MP) Emotional Exhaustion and Depersonalization scales and are positively correlated with Personal Accomplishment. These results are generally consistent with much of the previous literature comparing EI and burnout in the medical field.

Although the developing literature in the medical field exploring the relationship between EI and workplace success as well as stress and burnout typically show that EI and burnout are inversely related, not all studies report results consistent with this pattern. For example, Satterfield et al. (2009) observed EI (measured via the Emotional Intelligence Survey) and burnout (measured via the Tedium Index) at the beginning and end of a year in residency.

Results indicated that EI significantly increased over time, but EI at the beginning of the year was not significantly related to burnout. However, by the end of the year EI scores were significantly negatively related to burnout. Additionally, Gerits et al. (2004) found that male nurses' Total EI (as measured by the EQ-i) was only significantly related to one area of burnout, Personal Accomplishment (as measured by the Utrecht-Burnout Scale). However, for female nurses Total EI as well as four EI subscales were significantly related to all three areas of burnout (Emotional Exhaustion, Depersonalization, and Personal Accomplishment). The methodology reported in these studies is different in some important ways from the methodology used to obtain data in this study. For example, the sample demographics are different in the Gerits et al. (2004) study. Also, the instruments used to operationalize EI are different than the current study, and the current study includes the most widely used instrument to measure burnout (the MBI) whereas the instruments used to assess burnout in these studies vary. Even so, results from both studies still provide some support for the relationship between EI and burnout (i.e., the significant relationship obtained between EI and burnout at the end of a residency year reported by Satterfield et al. and the strong relationship between all EI and burnout scales among females reported by Gerits et al., 2004).

As noted above although not all studies show consistent and significant relationships between EI and burnout, most do. For example, Weng et al. (2011b) reported significant relationships between EI and all three scales of burnout on the MBI among practicing physicians. Regulation of emotions, use of emotions, and self-emotional appraisal were significantly related to all areas of burnout. Similarly, Lebensohn et al. (2014) found that in a sample of family medicine residents, burnout was significantly related to EI across all areas of EI with one exception, 'attention to feelings.' Others have reported similar results within the medical

profession. For example, according to Ortiz-Acosta and Beltran-Jimenez (2011) medical interns in a hospital setting who obtained low scores on the Trait Meta-Mood Scale (specifically, low emotional attention, low emotional clarity, and low emotional repair) reported higher levels of burnout.

In summary, the bulk of the literature shows that EI and burnout are significantly related among medical professionals, and the construct of EI is logically related to burnout, as previously discussed. The same pattern was observed in this study-- as SEF: MED scores increase MBI-HSS (MP) Emotional Exhaustion and Depersonalization scores decrease and Personal Accomplishment scores increase. These results differ from some previous findings in one important way. In this study Total EI as well as all subscale scores on the SEF: MED are significantly related to all areas of burnout, and reveal a more consistent relationship between EI and burnout than some of the previous studies.

Results from the literature and from this study support the assertion that there is a robust relationship between EI and burnout; but what is the direction of the relationship? Does strong EI insulate one from the negative effects of burnout, perhaps reducing or even preventing its negative effects. Alternatively, does burnout reduce positive EI levels over time? From the literature it would appear that some experts assume EI can predict and possibly reduce burnout. For example, Lindeman et al. (2017) observed burnout, EI, personality, and attitudes towards work experiences over three points in a year of surgical residency. They found that while burnout was highest at the beginning and end of the year, EI remained constant. Higher levels of burnout did not decrease EI, though total EI, positive work experiences, and the 'agreeableness' personality trait were all independent predictors of burnout. Because EI is thought to be changeable while personality traits are fixed, authors conclude that higher EI can be protective

against burnout and should be a future target for intervention (Lindeman et a., 2017). Bierle et al. (2018) reported that EI increased over time after residents attended only one EI workshop and when residents were made aware of their levels of EI; they concluded that explicating the relationship between EI and burnout might be sufficient to reduce burnout. Furthermore, some EI test authors recommend that workplace supervisors administer EI instruments to employees and use the results to develop EI on the assumption that better EI improves conflict resolution, teamwork, and decision making (Bar-On, 2004). Current results support the assumption that EI may help prevent against burnout, as those with higher EI exhibit fewer signs of burnout, though directionality should continue to be explored.

Limitations of the Study

There are a number of limitations of the study. As noted above the SEF: MED contains one type of respondent validity scale—consistency of responding, which is a strength. However, it does not include other types of respondent validity scales. For example, it does not address social desirability of responding. It is possible that participants respond to items across scales in a manner consistent with their idea of social acceptability. In other words, they may give responses that they assume are 'good,' socially desirable, answers rather than answers that are an accurate reflection of their skills or abilities. Socially desirable responses are particularly likely to occur when a survey asks socially sensitive questions, such as those relating to social-emotional skills and burnout (King & Brunner, 2000). These types of socially desirable responses can lead to invalid or less valid results (Huang, Liao, & Chang, 1998). A 'fake-good' scale was not included in the instrument. Future research could include the use of a social desirability measure, such as the Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne

& Marlow, 1960). Results from this instrument could add information useful in interpretation, i.e., those individuals with very high scores and consequently suspect scores could be eliminated.

Another limitation relates to the scale format. As discussed, the SEF: MED is a measure of trait EI, meaning it is particularly amenable to a self-reported response format. A common criticism of trait EI measures, and many self-report measures in general, is that scores may reflect an inaccurate self-perception of skills (Brackett & Mayer, 2003). Importantly, there is a supervisor version of SEF: MED which includes items yoked to those within the self-report version. It was designed to help supervisors characterize the EI of supervisees for professional development purposes. This strategy can help determine the veracity of the self-report version and as an instructional aid. Thus, future research should obtain and compare supervisor or peer reported level of EI in addition to the self-reported scores.

Finally, generalizability is limited. The current study includes residents across specialty area and across each year of residency, it appears that the sample is representative of residents within this geographic region, at a hospital located in a large urban area, and identified as a trauma center. However, possible differences in EI by year in residency and residency placement should be examined. Additionally, experiences and demands of physicians practicing in other settings may differ. It is likely that the current resident sample may not be representative of all medical professionals (e. g, nurses), and perhaps not even all residents. In addition, seasoned physicians may respond differently. The SEF: MED is intended to be a useful instrument for all medical professionals. Additional data are needed to address this goal. In the future researchers should expand data collection opportunities to include participants from across the medical profession.

Summary and Implications

Current results tentatively support the use of the SEF: MED as a measure of EI that is specific to the medical field. The SEF: MED may be the instrument of choice because items refer to situations medical personnel face. In addition, there are few choices for this purpose. Based on a review of the literature there has been only one previous attempt to develop an EI instrument specific to the medical field (Sharma & Jain, 2014). While this instrument contains items that may address common workplace demands in the medical profession, language of the items is not specific to the medical field. Additionally, the psychometric properties presented are strong but incomplete (i.e., concurrent validity data are not presented and evidence for concurrent/divergent validity is lacking). The SEF: MED addresses these limitations as it includes both language and content specific to medical professionals and provide evidence of concurrent validity. Furthermore, the SEF: MED is user friendly, with straightforward items that are easily understood (i.e., a Flesch-Kincaid Grade Level score of 8.5, well below the educational attainment of respondents), can be completed in a short amount of time, and is designed for group administration. This is conducive to the workplace demands of medical professionals. Finally, the inclusion of the Inconsistency Index supports the usefulness of the SEF: MED as supervisors can be confident in the validity of responses on the assessment, which is a common criticism of self-report measures.

In addition, this instrument may be used to inform residency programs about the level of EI among medical professionals for selection and as a tool for professional development. Professional development may be targeted at the individual or group level. For example, one's individual scores could be presented to each resident in comparison to group-level means. This would allow the individual to target specific EI skills areas that they are weak in. On the other

hand, intervention could also take place at the group level. Current results indicate that the sampled population has a deficit in EM scores as compared to IS and EA. Supervisors could use this finding to target the entire resident population's skills at managing emotions during group-level training opportunities.

Finally, SEF: MED can be used longitudinally and results might inform as the extent to which EI changes as residents progress through the residency program. Different points in a residency program may vary in terms of environmental stressors or increased workplace demands (Lindeman et al., 2017). For example, there may be times in residency where residents are more likely to experience burnout. Because of the demonstrated relationship between the EI and burnout, it may be possible for SEF: MED scores to identify those at-risk of burnout. In addition, interventions designed to improve EI may positively effect and reduce burnout. The SEF: MED may be used to inform supervisors as to EI level of their supervisees and to identify personal strengths and weaknesses that could be the target of individual or group level EI intervention. As previously discussed, it may be unrealistic to reduce workplace stressors, but early identification of poor EI skills and a focus on building EI skills may lead to increased resiliency.

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APPENDICES

Appendix A

Tables and Figures

Table 1

Literature Review Matrix of Emotional Intelligence Research in the Medical Field

Citation	Participants	Measures	Findings
Gardner, A. K., & Dunkin, B. J. (2018). Evaluation of validity evidence for personality, emotional intelligence, and situational judgment tests to identify successful residents. *JAMA surgery*, *153*(5), 409-416.	General surgery residents	• Personality • EI (MSCEIT) • Situational Judgement Tests • Residency performance	Attempt to identify successful surgical residents. EI was not related to resident performance.
Jensen, A. R., Wright, A. S., Lance, A. R., O'Brien, K. C., Pratt, C. D., Anastakis, D. J., ... & Horvath, K. D. (2008). The emotional intelligence of surgical residents: a descriptive study. *The American Journal of Surgery*, *195*(1), 5-10.	Surgery residents	• EI (EQ-i) • 20-item survey	Resident rated leadership skills are important. EI was higher among residents than national norms.

Table 1 Continued

Citation	Participants	Measures	Findings
Hollis, R. H., Theiss, L. M., Gullick, A. A., Richman, J. S., Morris, M. S., Grams, J. M., ... & Chu, D. I. (2017). Emotional intelligence in surgery is associated with resident job satisfaction. *journal of surgical research*, *209*, 178-183.	General surgery residents	• EI (Trait EI Questionnaire) • Resident performance (faculty evaluations of competency milestones, standardized test scores- USMILE and ABSITE)	Total EI was associated with some areas on the USMILE, but not with the ABSITE. None of the milestone scores were significantly associated with EI. EI was associated with job satisfaction.
Cherry, M. G., Fletcher, I., & O'Sullivan, H. (2014). Validating relationships among attachment, emotional intelligence and clinical communication. *Medical Education*, *48*(10), 988–997. https://doi-org.proxy.lib.utk.edu/10.1111/medu.12526	Year 2 medical students	• Attachment (attachment avoidance and attachment anxiety) • EI (MESCEIT) • Communication skills during a structured clinical exam	Attachment avoidance was negatively correlated with total EI. Total EI was positively correlated with performance on the clinical exam. EI mediated the influence of attachment avoidance on clinical exam performance.
Weng, H.-C., Chen, Y.-S., Lin, C.-S., Tu, Y.-K., Lin, H.-H., & Yu, S.-W. (2011). Specialty differences in the association between health care climate and patient trust. *Medical Education*, *45*(9), 905–912. https://doi.org/10.1111/j.1365-2923.2011.03984.x	Surgeons and Internists	• EI (WLEIS) • Patient trust • Health care climate (HCC)	Doctor EI was significantly positively correlated with patient trust. HCC was correlated with trust for internists but not for surgeons.

Table 1 Continued

Citation	Participants	Measures	Findings
Wagner, P. J., Moseley, G. C., Grant, M. M., Gore, J. R., & Owens, C. (2002). Physicians' emotional intelligence and patient satisfaction. *Family medicine*, *34*(10), 750-754.	Faculty members, resident doctors, and their patients	• EI (EQ-i) • Patient satisfaction survey	There was a positive relationship between the happiness subscale on the EI measure and patient satisfaction.
Stratton, T. D., Elam, C. L., Murphy-Spencer, A. E., & Quinlivan, S. L. (2005). Emotional intelligence and clinical skills: preliminary results from a comprehensive clinical performance examination. Academic Medicine, 80(10), S34-S37.	Medical students	• EI (Trait Meta-Mood Scale) • Communication skills in a clinical setting (simulated patients' ratings)	Higher EI was associated with better communication skills
Weng, H., Hung, C., Liu, Y., Cheng, Y., Yen, C., Chang, C., & Huang, C. (2011). Associations between emotional intelligence and doctor burnout, job satisfaction and patient satisfaction. *Medical Education*, *45*(8), 835-42.	Internists and out-patients	• EI (Wong and Law Emotional Intelligence Scale; WLEIS) • Patient satisfaction • Burnout (MBI)	Higher EI is significantly negatively correlated with burnout. EI is positively correlated with job satisfaction. Patient satisfaction is negatively correlated with burnout. Burnout is negatively correlated with job satisfaction.

Table 1 Continued

Citation	Participants	Measures	Findings
O'Rourke, M., Hammond, S., O'Flynn, S., & Boylan, G. (2010). The Medical Student Stress Profile: a tool for stress audit in medical training. *Medical Education*, *44*(10), 1027–1037. https://doi.org/10.1111/j.1365-2923.2010.03734.x	Medical students	• Medical Student Stress Profile (MSSP) • Stress • Coping • Personality • Motivation • EI (Trait Emotional Intelligence Scale)	Medical Student Stress Profile psychometric properties are considered strong. EI is significantly negatively correlated with several scales on the MSSP (Time, Total Stress, Emotional, Passive, Negative Affect) and positively correlated with Positive Worth.
Carr, S. E. (2009). Emotional intelligence in medical students: does it correlate with selection measures? *Medical Education*, *43*(11), 1069–1077. https://doi.org/10.1111/j.1365-2923.2009.03496.x	Medical students	• EI (MSCEIT) • Applicant Selection measures (UMAT, TER, Interview) • Demographics	Males had higher EI than females. Asian students had higher EI than white students. Highest group EI scores: Understanding Emotions. Lowest group EI scores: Perceiving Emotions. EI did not correlate with any of the selection measures.
Borges, N. J., Stratton, T. D., Wagner, P. J., & Elam, C. L. (2009). Emotional intelligence and medical specialty choice: findings from three empirical studies. *Medical Education*, *43*(6), 565–572. https://doi.org/10.1111/j.1365-2923.2009.03371.x	Medical students	• EI (MSCEIT) • Choice in specialization	No significant differences in EI were found between choices in specialty fields.

Table 1 Continued

Citation	Participants	Measures	Findings
Cofer, K. D., Hollis, R. H., Goss, L., Morris, M. S., Porterfield, J. R., & Chu, D. I. (2018). Burnout is associated with emotional intelligence but not traditional job performance measurements in surgical residents. *Journal of surgical education*.	General surgery residents	• EI (TEIQ-SF) • Burnout (MBI) • Job performance (faculty evaluation, clinical competency-based milestones, test scores –ABSITE, USMILE)	EI was significantly lower in residents identified as having burnout compared to those identified at not having burnout. Global EI was correlated with all aspects of burnout. Burnout was not related to measures of job performance.
Lindeman, B., Petrusa, E., McKinley, S., Hashimoto, D. A., Gee, D., Smink, D. S., ... & Phitayakorn, R. (2017). Association of burnout with emotional intelligence and personality in surgical residents: can we predict who is most at risk?. *Journal of surgical education*, *74*(6), e22-e30.	General Surgery residents	• Burnout (MBI) • EI (TEIQUE-SF) • Big 5 Personality Traits (TIPI)	Severe burnout was observed for 51% of residents. Burnout was highest at the beginning and end of the academic year. EI and personality remained stable. Some areas of EI and personality were protective against burnout. Higher EI and positive work experiences were predictors of burnout.

Table 1 Continued

Citation	Participants	Measures	Findings
McKinley, S. K., Petrusa, E. R., Fiedeldey-Van Dijk, C., Mullen, J. T., Smink, D. S., Scott-Vernaglia, S. E., ... & Phitayakorn, R. (2014). Are there gender differences in the emotional intelligence of resident physicians?. *Journal of surgical education*, *71*(6), e33-e40.	Residents in pathology, pediatrics, general surgery	• EI (TIEQue)	No differences between gender for Global EI scores. Women scored higher on Impulse Control and Relationships. Men scored higher on Stress Management and Emotion Management.
Gorgas, Greenberger, & Way. (2013). A Brief Educational Intervention Designed to Affect Emotional Intelligence Score in Emergency Medicine Residents. *Annals of Emergency Medicine, 62*(5), S174.	Emergency Medicine Residents	EI (Hay EI Survey) across Time 1, Time 2, Time 3.	After EI intervention conducted the control group showed no increase in EI over Time 1, 2, 3. Intervention group no different from control at Time 1 or 2, but increased in EI at time 3
Papanagnou, D. S., Shah, A., London, K., Chandra, S., Naples, R., & Linder, K. (2017). An assessment of emotional intelligence in emergency medicine resident physicians. *International Journal of Medical Education, 8*, 439-445.	Emergence Medicine Residents	• EI (EQ-I 2.0)	EI higher in females. PGY-2s has lowest EI. PGY 3 significantly higher EI than PGY 1.

Table 1 Continued

Citation	Participants	Measures	Findings
Lebensohn, P., Dodds, S., Brooks, A., Cook, P., Schneider, C., Woytowicz, J., & Maizes, V. (2014). A Longitudinal Study of Well-Being, Burnout and Emotional Intelligence in Family Medicine Residents. *The Journal of Alternative and Complementary Medicine*, *20*(5), A8.	Family Medicine Residents	• Stress • Burnout (measurement tool not reported) • Depression • Affect • Life satisfaction • EI (measurement tool not reported) • Mindfulness/gratitude	Some areas of burnout (Emotional Exhaustion and Depersonalization) increased between first and second years of residency. Levels remained high at graduation. Positive Affect and Life Satisfaction decreased between first and second years of residency. Residents identified as at-risk for burnout had lower EI.
Ortiz-Acosta, R., & Beltrán-Jiménez, B. (2011). Inteligencia emocional percibida y desgaste laboral en médicos internos de pregrado. *Educacion Medica*, *14*(1), 49-55.	Undergraduate Interns	• EI (Trait Meta-Mood Scale) • Burnout (MBI)	Low emotional attention and clarity were predictive of burnout. Emotional attention was negatively related to Emotional Exhaustion. Clarity correlated to Emotional Repair and Self-Fulfillment. Clarity negatively correlated with Emotional Exhaustion and Depersonalization. Emotional Repair was negatively correlated with Exhaustion and Depersonalization, but positively correlated with Self-Fulfillment.

Table 1 Continued

Citation	Participants	Measures	Findings
Arora, S., Russ, S., Petrides, K., Sirimanna, P., Aggarwal, R., Darzi, A., & Sevdalis, N. (2011). Emotional Intelligence and Stress in Medical Students Performing Surgical Tasks. *Academic Medicine, 86*(10), 1311-1317.	Medical undergraduates	• Surgical performance (simulated unfamiliar laparoscopic task) • Measures of self-report and objective stress (state-trait anxiety inventory; heart rate) • EI (TEIQue-SF)	Higher EI was positively correlated with higher stress. Those with higher EI were better at reducing stress post-performance than though with lower EI.
Smith, A. B., Donoghue, E., Greenberg, M., Quinn, J., Weaver, K., Barraco, R., ... & Jacoby, J. L. (2016). 244 Measures of Resident Burnout, Empathy, and Emotional Intelligence as a Function of Years in Post-Graduate Training. *Annals of Emergency Medicine*, *68*(4), S95.	Residents in emergency medicine, family practice, internal medicine and OB/GYN	• Jefferson scale of Physician Empathy • Burnout (MBI) • EI (Emotional and Social Competency Inventory)	Burnout did not vary by residency year. Positive outlook on the ESCI was significantly lower in year 2 than other years. Empathy decreased longitudinally.
Talarico, J., Varon, A., Banks, S., Berger, J., Pivalizza, E., Medina-Rivera, G., . . . Metro, D. (2013). Emotional intelligence and the relationship to resident performance: A multi-institutional study. *Journal of Clinical Anesthesia, 25*(3), 181-7.	Residents in anesthesiology	• EI (BarOn EQ-i:125) • Resident performance (the 6 ACGME competencies evaluated by faculty)	Several aspects of EI, including Total EI, were correlated with performance across all ACGME competencies.

Table 1 Continued

Citation	Participants	Measures	Findings
Satterfield, J., Swenson, S., & Rabow, M. (2009). Emotional intelligence in internal medicine residents: educational implications for clinical performance and burnout. *Annals of behavioral science and medical education: journal of the Association for the Behavioral Sciences and Medical Education*, *14*(2), 65.	Internal Medicine residents	• EI (Emotional Intelligence Survey) • Burnout (Tedium Index) • Clinical performance (overall performance, humanism, clinical interviewing skills, professionalism)	EI increased significantly from the beginning to end of one year in residency. Burnout scores were similar to levels on other human service workers. EI and the end of year was negatively correlated with burnout. EI was correlated with higher performance and interviewing ratings.
Gerits, L., Derksen, J. J., & Verbruggen, A. B. (2004). Emotional intelligence and adaptive success of nurses caring for people with mental retardation and severe behavior problems. *Mental Retardation*, *42*(2), 106-121.	Female nurses	• EI (EQ-i) • Burnout (Utrecht-Burnout Scale)	Negative relationship between some areas of EI and burnout.
McCallin, A., & Bamford, A. (2007). Interdisciplinary teamwork: Is the influence of emotional intelligence fully appreciated? *Journal of Nursing Management, 15*(4), 386-391.	Teams of interdisciplinary health professionals	• Interviewing and observation conducted by researchers	Teams with higher collective EI had better teamwork, lower anxiety, and higher job satisfaction. EI and team safety were positively correlated.

Table 1 Continued

Citation	Participants	Measures	Findings
Amundson, S. J. (2005). The impact of relational norms on the effectiveness of health and human service teams. *The Health Care Manager*, *24*(3), 216-224.	Health care and human service teams	• Group EI (Group Emotional Intelligence Questionnaire) • Team effectiveness scale • Demographics	Group EI was predictive of team effectiveness.
Weng, H. C. (2008). Does the physician's emotional intelligence matter?: Impacts of the physician's emotional intelligence on the trust, patient-physician relationship, and satisfaction. *Health care management review*, *33*(4), 280-288.	Doctors and their patients	• Patient-rated trust, satisfaction, and patient-physician relationship • Doctor-rated EI (WLEIS), patient-physician relationship, and trust	Physician EI is related to patient trust. Better patient-physician relationship were related to higher patient satisfaction.
Weng, H. C., Chen, H. C., Chen, H. J., Lu, K., & Hung, S. Y. (2008). Doctors' emotional intelligence and the patient–doctor relationship. *Medical education*, *42*(7), 703-711.	Doctors and their patients	• Doctor EI (self-report and nurse-report) • Patient survey • Patient-Doctor Relationship Questionnaire (rated by doctors and nurses)	EI as rated by nurses was positively correlated with patient trust, better doctor-patient relationships and patient satisfaction
Talarico, J. F., Varon, A. J., Banks, S. E., Berger, J. S., Pivalizza, E. G., Medina-Rivera, G., ... & Ball, R. D. (2013). Emotional intelligence and the relationship to resident performance: a multi-institutional study. *Journal of clinical anesthesia*, *25*(3), 181-187.	Anesthesiology residents	• EI (EQ-i) • Resident performance (measured by daily faculty evaluations consistent with ACGME competencies)	Several areas of EI, including total EI, were correlated with resident performance across ACGME competencies.

Table 1 Continued

Citation	Participants	Measures	Findings
Weng, H. C., Steed, J. F., Yu, S. W., Liu, Y. T., Hsu, C. C., Yu, T. J., & Chen, W. (2011). The effect of surgeon empathy and emotional intelligence on patient satisfaction. *Advances in health sciences education*, *16*(5), 591-600.	Surgeons and their patients	• Nurse-reported surgeon EI • Self-reported EI (WLEIS) • Self-reported empathy (Jefferson Scale of Physician Empathy) • Patient-Doctor Relationship questionnaire (patient-reported) • Patient satisfaction before and after surgery • Patient health status (patient-reported)	Surgeons with more experience had higher EI. Surgeons with higher EI had higher levels of patient satisfaction and better patient-surgeon relationships. Surgeons with higher EI had patients with better self-reported health status.

Table 2

Demographic Information

	N	Percentage
Gender	321	--
Male	229	64.5
Female	125	35.2
Year in Residency	355	--
Year 1	175	49.3
Year 2	69	19.4
Year 3	58	16.3
Year 4	32	9.0
Residency Program	347	--
Anesthesiology	43	12.4
Dentistry	13	3.7
Family Medicine	34	9.8
Internal Medicine	60	17.3
OBGYN	34	9.8
OMFS	31	3.7
Radiology	31	8.9
Surgery	90	25.9
Transition	8	2.3
Urology	1	0.3

Table 3

Factor Loadings for Exploratory Factor Analysis With Varimax Rotation of the 39-item version of the Scale of Emotional Functioning: Medicine (SEF: MED)

Questions	Emotional Intelligence Scales		
	Interpersonal Skills (α = .88)	Emotional Management (α = .85)	Emotional Awareness (α = .87)
1. recognize the feelings of others.	*.766*		
2. lack empathy for my patients	*.735*		
3. express concern for my patients' feelings	*.741*		
4. interact with patients reluctantly	*.670*		
5. take time to learn how others are feeling	*.667*		
6. respond in kind to the emotions of others	*.652*		
7. relate to patients easily	*.640*		
8. lack respect for the feelings of patients	*.624*		
9. take time to calm patients who are upset	*.590*		
10. have difficulty showing affection	*.456*		
11. am friendly	*.543*		
12. have difficulty compromising	*.455*		
13. work well with teammates	*.411*		
14. have difficulty remaining effective when upset		*.764*	
15. am easy-going		*.684*	
16. let stress overwhelm me		*.728*	
17. maintain a healthy attitude about negative evaluations		*.645*	
18. find it difficult to be resilient		*.632*	
19. exhibit a calming influence		*.589*	
20. am unable to shake pessimistic moods		*.570*	
21. experience emotions that seem compatible with those of others		*.560*	
22. have trouble performing well under pressure		*.493*	
23. make eye contact when receiving criticism		*.441*	
24. find it difficult to get along with colleagues		*.401*	
25. am energized by change		*.407*	
26. am dissatisfied with my life		*.326*	
27. am unable to interpret the emotions of patients			*.767*

Table 3 Continued

Questions	Emotional Intelligence Scales		
	Interpersonal Skills (α = .88)	Emotional Management (α = .85)	Emotional Awareness (α = .87)
28. misinterpret nonverbal communication			*.726*
29. create positive relationships with patients			*.649*
30. have difficulty recognizing the emotional tone within groups			*.635*
31. am able to predict how others will react to me			*.617*
32. handle upsetting situations poorly			*.554*
33. easily calm anxious patients			*.517*
34. have difficulty being a good listener to patients			*.423*
35. use criticism constructively			*.428*
36. have difficulty recognizing when I offend patients			*.401*
37. am fun to be with			*.421*
38. misinterpret nonverbal communication			*.247*
39. am aware of the emotional needs of patients			*.251*

Table 4

Factor Loadings for the final 36-item version of the Scale of Emotional Functioning: Medicine (SEF: MED)

Questions	Emotional Intelligence Scales		
	Interpersonal Skills (α = .81)	Emotional Management (α = .82)	Emotional Awareness (α = .84)
1. lack empathy for my patients	*.726*		
2. express concern for my patients' feelings	*.691*		
3. interact with patients reluctantly	*.581*		
4. take time to learn how others are feeling	*.577*		
5. respond empathetically to the emotions of others	*.379*		
6. relate to patients easily	*.562*		
7. lack respect for the feelings of patients	*.622*		
8. take time to calm patients who are upset	*.401*		
9. have difficulty showing affection	*.432*		
10. am friendly	*.373*		
11. have difficulty compromising	*.427*		
12. have difficulty being a good listener to patients	*.487*		
13. have difficulty remaining effective when upset		*.661*	
14. am easy-going		*.527*	
15. let stress overwhelm me		*.741*	
16. maintain a healthy attitude about negative evaluations		*.540*	
17. find it difficult to be resilient		*.608*	
18. exhibit a calming influence		*.533*	
19. am unable to shake pessimistic moods		*.446*	
20. have trouble performing well under pressure		*.634*	
21. make eye contact when receiving criticism		*.419*	
22. find it difficult to get along with colleagues		*.317*	
23. am dissatisfied with my life		*.368*	
24. handle upsetting situations poorly		*.588*	

Table 4 Continued

Questions	Emotional Intelligence Scales		
	Interpersonal Skills (α = .81)	Emotional Management (α = .82)	Emotional Awareness (α = .84)
25. recognize the feelings of others.			*.445*
26. experience emotions that seem compatible with those of others			*.282*
27. am unable to interpret the emotions of patients			*.551*
28. misinterpret nonverbal communication			*.692*
29. create positive relationships with patients			*.455*
30. have difficulty recognizing the emotional tone within groups			*.672*
31. am able to predict how others will react to me			*.665*
32. easily calm anxious patients			*.380*
33. have difficulty recognizing when I offend patients			*.456*
34. am fun to be with			*.440*
35. misinterpret nonverbal communication			*.573*
36. am aware of the emotional needs of patients			*.417*

Table 5

Percentage of Agreements on Identified Consistency Items

	N	Percentage of Agreement	Percentage of Disagreement
Item 3 and Item 27	23	86.96 (n = 20)	13.04 (n = 3)
Item 26 and Item 33	23	95.65 (n = 22)	4.35 (n = 1)
Item 18 and Item 30	23	100 (n = 23)	0 (n = 0)
Item 28 and Item 35	23	73.91 (n = 17)	26.09 (n = 6)
Item 13 and Item 24	23	100 (n = 23)	0 (n = 0)
Item 25 and Item 34	23	82.61 (n = 19)	21.74 (n = 5)

Table 6

SEF: MED Descriptive Statistics

	N	Min	Max	*M*	*SD*	Skewness	Kurtosis
SEF: MED Total EI	316	2.72	4.89	3.90	.35	-.29	.72
SEF: MED Interpersonal Skills	316	2.50	5.00	3.94	.42	-.13	.59
SEF: MED Emotional Management	316	2.25	5.00	3.82	.44	-.40	.72
SEF: MED Emotional Awareness	316	2.83	5.00	3.94	.37	-.23	.35

Table 7

PEC Descriptive Statistics

	N	Min	Max	*M*	*SD*	Skewness	Kurtosis
PEC Global EI	135	2.66	4.74	3.77	.37	.01	-.05
PEC Intrapersonal	135	2.84	4.68	3.79	.42	-.02	-.45
PEC Intrapersonal- Identification	135	2.00	5.00	3.91	.55	-.24	.06
PEC Intrapersonal- Understanding	135	2.60	5.00	4.09	.55	-.41	-.30
PEC Intrapersonal- Expression	135	2.00	5.00	3.77	.59	-.28	-.07
PEC Intrapersonal- Regulation	135	1.80	5.00	3.64	.69	-.18	-.21
PEC Intrapersonal- Utilization	135	2.00	5.00	3.53	.57	-.22	-.03
PEC Interpersonal	135	2.48	4.76	3.75	.42	-.04	.14
PEC Interpersonal- Identification	135	2.60	5.00	4.14	.53	-.31	.08
PEC Interpersonal- Understanding	135	2.20	5.00	4.03	.52	-.11	.17
PEC Interpersonal- Expression	135	2.00	5.00	3.86	.63	-.16	-.35
PEC Interpersonal- Regulation	135	1.60	4.80	3.55	.54	-.34	.61
PEC Interpersonal- Utilization	135	1.20	5.00	3.17	.76	-.17	-.09

Table 8

MBI-HSS (MP) Descriptive Statistics

	N	Min	Max	*M*	*SD*	Skewness	Kurtosis
MBI-HSS (MP) Emotional Exhaustion	262	0.00	46.00	19.14	10.28	.23	-.38
MBI-HSS (MP) Depersonalization	262	0.00	24.00	9.47	5.85	.35	-.68
MBI-HSS (MP) Personal Accomplishment	262	5.00	48.00	37.92	6.90	-1.01	1.73

Table 9

CFA Model Fit Indexes

	Fit Statistics	Model Fit Criteria
Fit Indexes		
Relative Chi Square (CMIN/DF)	4.18	>2 and <5
Tucker and Lewis's Index of Fit (TLI)	.97	> .90
Bentler's Comparative Fit Index (CFI)	.98	> .90
Root Mean Square Error of Approximation (RMSEA)	.10	<.11

Table 10

Correlation Coefficients Expressing the Relations Between the SEF: MED and the PEC

	SEF: MED Interpersonal Skills (IS)	SEF: MED Emotional Management (EM)	SEF: MED Emotional Awareness (EA)	SEF: MED Total EI
PEC Intrapersonal	.56*	.52*	.55*	.64*
PEC Interpersonal	.56*	.30*	.62*	.57*
PEC Global EI	.63*	.47*	.66*	.68*
SEF: MED Interpersonal Skills (IS)	—	.46*	.70*	.85*
SEF: MED Emotional Management (EM)	—	—	.57*	.81*
SEF: MED Emotional Awareness (EA)	—	—	—	.88*
SEF: MED Total EI	—	—	—	—

* Correlation Significant at .01 level (2-tailed)

Table 11

Correlation Coefficients Expressing the Relations Between the SEF: MED and PEC subscales

	SEF: MED Interpersonal Skills (IS)	SEF: MED Emotional Management (EM)	SEF: MED Emotional Awareness (EA)	SEF: MED Total EI
PEC Intrapersonal Identification	.06	.16	.11	.13
PEC Intrapersonal Understanding	.00	.16	.04	.08
PEC Intrapersonal Expression	.17*	.14	.12	.17
PEC Intrapersonal Regulation	.10	.39**	.08	.23**
PEC Intrapersonal Utilization	.19*	-.01	.27**	.16
PEC Interpersonal Identification	.22*	.13	.29**	.24**
PEC Interpersonal Understanding	.08	.08	.14	.11
PEC Interpersonal Expression	.32**	.06	.26**	.25**
PEC Interpersonal Regulation	.37**	.15	.38**	.35**
PEC Interpersonal Utilization	-.13	.08	.00	-.02

** Correlation Significant at .01 level (2-tailed)

*Correlation is significant at the 0.05 level (2-tailed).

Table 12

Correlation Coefficients Between the SEF: MED and MBI-HSS (MP)

	SEF: MED Interpersonal Skills (IS)	SEF: MED Emotional Management (EM)	SEF: MED Emotional Awareness (EA)	SEF: MED Total EI
Emotional Exhaustion	-.38*	-.54*	-.34*	-.50*
Depersonalization	-.46*	-.35*	-.30*	-.44*
Personal Accomplishment	.46*	.39*	.47*	.52*

*Correlation Significant at .01 level (2-tailed)

Dimensions	Self	Other
Identification	Identify my emotions	Identify others' emotions
Understanding	Understand my emotions	Understand others' emotions
Expression	Express my emotions	Listen to others' emotions
Regulation	Regulate my emotions	Regulate others' emotions
Use	Use my emotions	Use others' emotions
	Intrapersonal EI	**Interpersonal EI**
	Global EI	

Figure 1. Table of PEC Scales

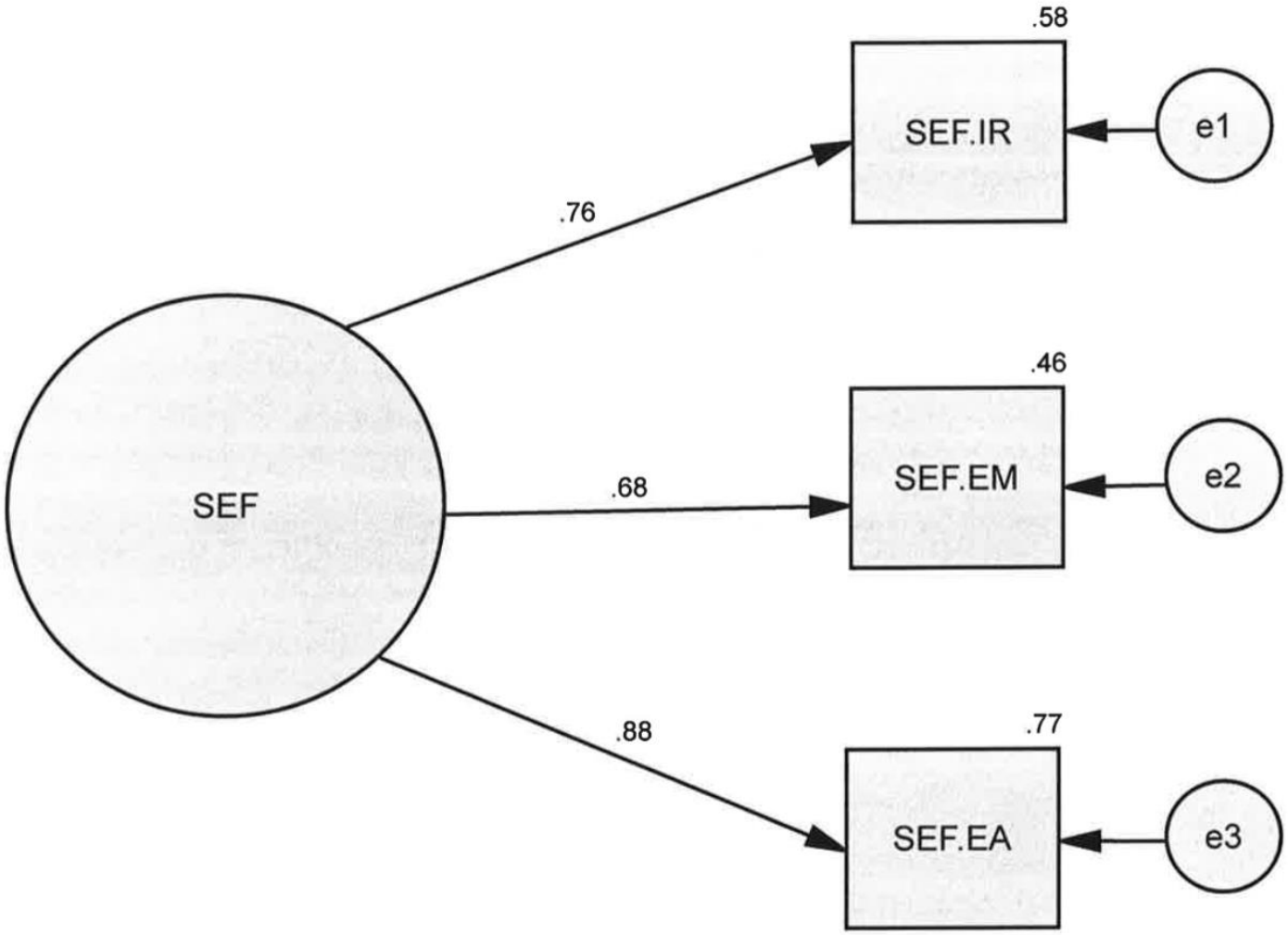

Figure 2. Confirmatory Factor Analysis Three-Factor Model

Appendix B

Scale of Emotional Functioning: Heath Service Providers (SEF: HSP)

Self-Report Format

R. Steve McCallum & Baileigh A. Kirkpatrick

ID Number:_____ **Date: _____**

Please respond to the following items by circling the option that best characterizes your behavior.

I…					
1. recognize the feelings of others.	Never	Rarely	Sometimes	Often	Always
2. lack empathy for my patients.	Never	Rarely	Sometimes	Often	Always
3. express concern for my patients' feelings.	Never	Rarely	Sometimes	Often	Always
4. interact with patients reluctantly.	Never	Rarely	Sometimes	Often	Always
5. take time to learn how others are feeling.	Never	Rarely	Sometimes	Often	Always
6. respond empathically to the emotions of others.	Never	Rarely	Sometimes	Often	Always
7. relate to patients easily.	Never	Rarely	Sometimes	Often	Always
8. lack respect for the feelings of patients.	Never	Rarely	Sometimes	Often	Always
9. take time to calm patients who are upset.	Never	Rarely	Sometimes	Often	Always
10. have difficulty showing affection.	Never	Rarely	Sometimes	Often	Always
11. am friendly.	Never	Rarely	Sometimes	Often	Always
12. have difficulty compromising.	Never	Rarely	Sometimes	Often	Always
13. work well with teammates.	Never	Rarely	Sometimes	Often	Always
14. have difficulty remaining effective when upset.	Never	Rarely	Sometimes	Often	Always

15. am easy-going.	Never	Rarely	Sometimes	Often	Always
16. let stress overwhelm me.	Never	Rarely	Sometimes	Often	Always
17. maintain a healthy attitude about negative evaluations.	Never	Rarely	Sometimes	Often	Always
18. find it difficult to be resilient.	Never	Rarely	Sometimes	Often	Always
19. exhibit a calming influence.	Never	Rarely	Sometimes	Often	Always
20. am unable to shake pessimistic moods.	Never	Rarely	Sometimes	Often	Always
21. experience emotions that seem compatible with those of others.	Never	Rarely	Sometimes	Often	Always
22. have trouble performing well under pressure.	Never	Rarely	Sometimes	Often	Always
23. make eye contact when receiving criticism.	Never	Rarely	Sometimes	Often	Always
24. find it difficult to get along with colleagues.	Never	Rarely	Sometimes	Often	Always
25. am energized by change.	Never	Rarely	Sometimes	Often	Always
26. am dissatisfied with my life.	Never	Rarely	Sometimes	Often	Always
27. am able to interpret the emotions of patients	Never	Rarely	Sometimes	Often	Always
28. misinterpret nonverbal communication.	Never	Rarely	Sometimes	Often	Always
29. create positive relationships with patients.	Never	Rarely	Sometimes	Often	Always
30. have difficulty recognizing the emotional tone within groups.	Never	Rarely	Sometimes	Often	Always
31. am able to predict how others will react to me.	Never	Rarely	Sometimes	Often	Always
32. handle upsetting situations poorly.	Never	Rarely	Sometimes	Often	Always
33. easily calm anxious patients.	Never	Rarely	Sometimes	Often	Always
34. have difficulty being a good listener to patients.	Never	Rarely	Sometimes	Often	Always
35. use criticism constructively.	Never	Rarely	Sometimes	Often	Always
36. have difficulty recognizing when I offend patients.	Never	Rarely	Sometimes	Often	Always

37. am fun to be with.	Never	Rarely	Sometimes	Often	Always
38. misinterpret nonverbal communication.	Never	Rarely	Sometimes	Often	Always
39. am aware of the emotional needs of patients.	Never	Rarely	Sometimes	Often	Always

Appendix C

Scale of Emotional Functioning: Medicine (SEF: MED)

Self-Report Format

R. Steve McCallum & Baileigh A. Kirkpatrick

ID Number:_____ **Date: _____**

Please respond to the following items by circling the option that best characterizes your behavior.

I…					
1. lack empathy for my patients.	Never	Rarely	Sometimes	Often	Always
2. express concern for my patients' feelings.	Never	Rarely	Sometimes	Often	Always
3. interact with patients reluctantly.	Never	Rarely	Sometimes	Often	Always
4. take time to learn how others are feeling.	Never	Rarely	Sometimes	Often	Always
5. respond empathically to the emotions of others.	Never	Rarely	Sometimes	Often	Always
6. relate to patients easily.	Never	Rarely	Sometimes	Often	Always
7. lack respect for the feelings of patients.	Never	Rarely	Sometimes	Often	Always
8. take time to calm patients who are upset.	Never	Rarely	Sometimes	Often	Always
9. have difficulty showing affection.	Never	Rarely	Sometimes	Often	Always
10. am friendly.	Never	Rarely	Sometimes	Often	Always
11. have difficulty compromising.	Never	Rarely	Sometimes	Often	Always
12. have difficulty being a good listener to patients	Never	Rarely	Sometimes	Often	Always
13. have difficulty remaining effective when upset.	Never	Rarely	Sometimes	Often	Always
14. am easy-going.	Never	Rarely	Sometimes	Often	Always
15. let stress overwhelm me.	Never	Rarely	Sometimes	Often	Always

16. maintain a healthy attitude about negative evaluations.	Never	Rarely	Sometimes	Often	Always
17. find it difficult to be resilient.	Never	Rarely	Sometimes	Often	Always
18. exhibit a calming influence.	Never	Rarely	Sometimes	Often	Always
19. am unable to shake pessimistic moods.	Never	Rarely	Sometimes	Often	Always
20. have trouble performing well under pressure.	Never	Rarely	Sometimes	Often	Always
21. make eye contact when receiving criticism.	Never	Rarely	Sometimes	Often	Always
22. find it difficult to get along with colleagues.	Never	Rarely	Sometimes	Often	Always
23. am dissatisfied with my life.	Never	Rarely	Sometimes	Often	Always
24. handle upsetting situations poorly.	Never	Rarely	Sometimes	Often	Always
25. am able to interpret the emotions of patients.	Never	Rarely	Sometimes	Often	Always
26. misinterpret nonverbal communication.	Never	Rarely	Sometimes	Often	Always
27. create positive relationships with patients.	Never	Rarely	Sometimes	Often	Always
28. have difficulty recognizing the emotional tone within groups.	Never	Rarely	Sometimes	Often	Always
29. am able to predict how others will react to me.	Never	Rarely	Sometimes	Often	Always
30. easily calm anxious patients.	Never	Rarely	Sometimes	Often	Always
31. have difficulty recognizing when I offend patients.	Never	Rarely	Sometimes	Often	Always
32. am fun to be with.	Never	Rarely	Sometimes	Often	Always
33. misinterpret nonverbal communication	Never	Rarely	Sometimes	Often	Always
34. am aware of the emotional needs of patients.	Never	Rarely	Sometimes	Often	Always
35. recognize the feelings of others.	Never	Rarely	Sometimes	Often	Always
36. experience emotions that seem compatible with those of others.	Never	Rarely	Sometimes	Often	Always

Appendix D

Consistency Items Survey

For each of the 7 items listed in the boxes choose an item from the item bank below that you feel best matches it. In some cases both item pairs are worded positively. For example:

Item: I enjoy spending time with friends Pairs with: I like to relax by hanging with friends

On the other hand, for some member pairs one or both items might be negatively worded but still have consistent content. For example:

Item: I am dissatisfied with my life Pairs with: I am satisfied with my life

Item: I let stress overwhelm me easily Pairs with: I am not stressed easily

The goal is to identify items that have consistent content, i.e., items that ask the same thing. Remember, any two items may be addressing the same concept even if one or both are negative.

Item:	**Letter of Best Match:**
1. I interact with patients reluctantly	1.
2. I misinterpret nonverbal communication	2.
3. I exhibit a calming influence	3.
4. I have difficulty recognizing the emotional tone within groups	4.
5. I have difficulty remaining effective when upset	5.
6. I am able to interpret the emotions of patients	6.
7. I work well with teammates	7.

Item Bank:

a. I create positive relationships with patients
b. I recognize the feelings of others
c. I am aware of the emotional needs of patients
d. I easily calm anxious patients
e. I misinterpret nonverbal communication
f. I handle upsetting situations poorly
   I find it difficult to get along with colleagues

VITA

Baileigh Kirkpatrick was born in Snellville, Georgia to Pat and Dawn Kirkpatrick. She graduated from Berry College in 2015 with a Bachelor of Science degree in Psychology, and minors in Sociology and Family Studies. In August of 2015, Baileigh accepted a position in the University of Tennessee, Knoxville's School Psychology doctoral program. Baileigh earned a Master of Science degree in Applied Educational Psychology in May 2018. In August of 2019, Baileigh will begin an internship with the Tennessee Internship Consortium in Psychology. In August of 2020, Baileigh will complete her doctorate degree.